ព្រះរាជាណាចក្រកម្ពុជា

ជាតិ សាសនា ព្រះមហាក្សត្រ

KINGDOM OF CAMBODIA
NATION RELIGION KING

ក្រសួងសុខាភិបាល

Ministry of Health

របាយការណ៍ស្តីពីជំងឺរបេងឆ្នាំ២០០៨

TUBERCULOSIS REPORT 2008

រៀបរៀងដោយ កម្មវិធីជាតិកំចាត់រោគរបេង

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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 about two folds, up to 39,820 cases of all forms in 2008. The impact of HIV/AIDS on TB in the coming years will be of 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 Plan and the global 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.

- to expand the DOTS strategy to cover all health centers.
- to attain the case detection rate of 70%
- to maintain the high cure rate of more than 85%.

The longer aims are to:

- to reduce the prevalence of TB by 50% by 2010; and
- to reduce death due to TB by half by 2010.

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 69% in 2008. It also has been maintaining the cure rate over 85% .

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 and able to provide quality health care for the patients.

In 2008, 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 2008.

II. Epidemiology of Tuberculosis

1. TB in the world :

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, nearly to Nine million people develop active tuberculosis (TB), and nearly two million died.[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].

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

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 lost income.

In addition to the devastating economic costs, TB imposes indirect negative consequences such as children leave school because of their parents ' 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 is infected with Mycobacterium tuberculosis. In 2007, the estimated incidence rate of new smear positive pulmonary tuberculosis is 219/100,000 population and incidence rate of all forms of tuberculosis is 495/100,000 population and that the death rate of tuberculosis is 89/100,000 population per year.

Before 1994, the case detection and treatment of tuberculosis were not satisfactory. For instance in 1993, the case detection rate of smear positive pulmonary tuberculosis nationwide was about 44 % and the cure rate was only 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/AIDS :

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 develop 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.

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

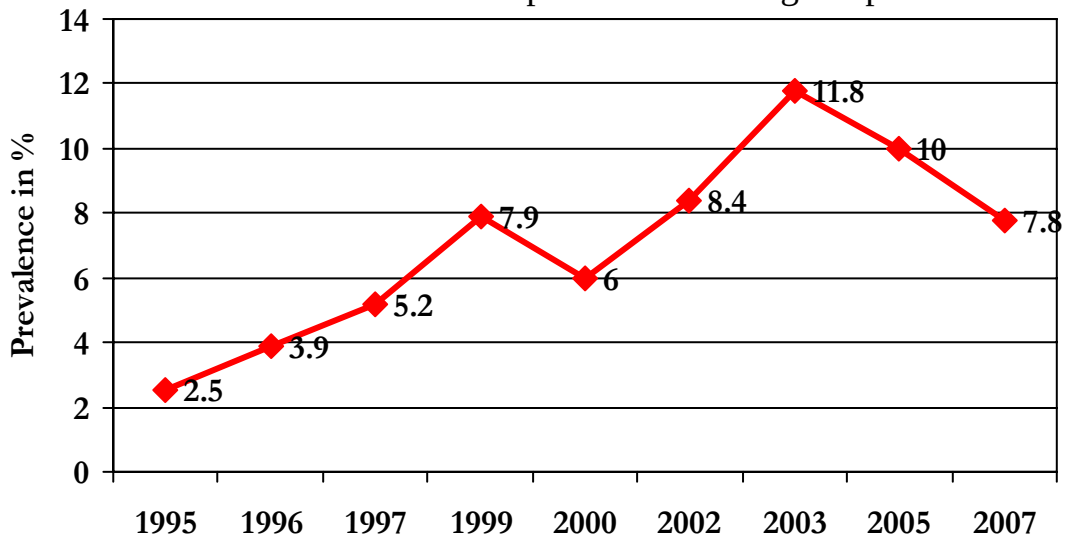
Treatment of TB can prolong and improve the quality of life for HIV-positive people but cannot alone prevent people from dying of AIDS .

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

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, and in 2007 for the 3rd round. The result showed that 11.8 %, 10 %, and 7.8% respectively were HIV positive.

Trend in HIV Sero-prevalence among TB patients



III. Policies, Strategy and Guidelines

In 2008, 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 2008-2009
- National Guidelines for diagnosis and treatment of TB in Children
- Draft on PPM-DOTS 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 2008 as follows :

a). Training:

- 63 Training course on 4 FDCs
- 21 Training courses on TB / HIV activities.
- 14 Training courses on Childhood TB and EP Tuberculosis
- 8 Training course on sputum collection and smear making
- 4 Training course on microscopy maintenance
- 3 Training course on Slide Cross-Checkers.
- 2 Training of Trainers course on TB Laboratory
- 3 Training course on TB culture
- 4 Training course on X-ray reading
- 6 Training course on TB/HIV clinical management
- 2 Training course on TB drug management
- 2 Training course on Drug Resistance TB (MDR-TB)
- 2 Training course on Tuberculin Skin Test (TST)

- 2 Training Course on Basic Epidemiology.
- 2 Training Course on Data management.
- 1 Training Course on Health Information System.
- 2 Training Course on TB Supervision.
- 3 training courses on TB Management Activities at HC level.
- 5 training courses on PPM-DOTS Health Education

b). Workshops :

- 6 Workshops on PPM DOTS Activities.
- 2 Workshops on TB in Prisons
- 3 Workshops on EQA
- 1 Workshop on annual operational plan for TB control
- 2 Quarterly Workshops on TB laboratory activities.
- 4 Workshops on ACSM for TB control
- 4 Workshops on M&E for TB control
- 1 Workshops on TB drug Management.
- 2 Workshops on Second line drug Management.
- 1 Annual TB Conference for TB control in year 2007.
- 2 Workshops on TST surveys
- 1 Workshop on evaluation on JICA project phase II
- 4 Workshop on TB/HIV activities.
- 6 Workshop on improving TB diagnosis Capacity.
- 2 Workshop on PC System.

* NTP also sent the TB staff to attend the international training courses, study tours and meeting/conferences in 2008 as follows:

- Japan : 9 staff
- Thailand : 9 staff
- Egypt : 1 staff
- India : 1 staff
- Hong kong : 2 staff
- Korea : 1 staff
- France : 10 staff
- Netherland : 1 staff
- Vietnam : 1 staff
- Indonesia : 9 staff

The NTP have organized the Study-tours in Country for 9 times.

2. Supervision :

To strengthen the TB control activities and improve the capacity of staff at peripheral level, in 2008 NTP conducted the 582 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 2008 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.

VI. Drugs and Lab. Reagents

National Tuberculosis Program (NTP) monitors closely the situation of 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 Japan International Cooperation Agency (JICA) has done on TBDM issues as follows:

- NTP monitors closely the stock situation, distribution and the use of TB drug through database system and conducting of TBDM survey.

- In the year 2008, NTP had been procured TB drugs which are financially supported by Global Fund to fight HIV/AIDS, TB and Malaria (GFATM Round 5) and World Health Organization (TB drug for children).

-Arranged and discussed the need of TB drugs under the support of TB GFATM round 5 for 3rd Batch.

- We always facilitate the additional request for some ODs.

-In every quarterly workshop of NTP, TBDM is the one topic which is always presented especially focusing on distribution and TB drug request.

-NTP always sends our own 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.

-We also presented the method in calculating the needs of TB drugs for NTP in the workshop conducted by department of drug and food, MOH.

-Since June 2008, NTP conducted massive training course on introduction of four fixed-dose combination TB drugs for all TB staffs in the whole country at all health facilities.

- In 2008, NTP conducted the Assessment Survey of TB Drug Management in 8 operational districts of 8 provinces to monitor quality of DOTS implementation and to improve TB drug distribution and TB drug use practices. The result of TB Drug Management Survey in this year was better than the previous years and was presented in the national workshop on TB drug management.

VII. Service provision

The diagnosis and treatment of tuberculosis are free of charge in all TB services throughout the country. Today, there are 1066 health facilities providing DOTS.

1. Case Detection Activity :

TB case detection nationwide in 2008 are as follows:

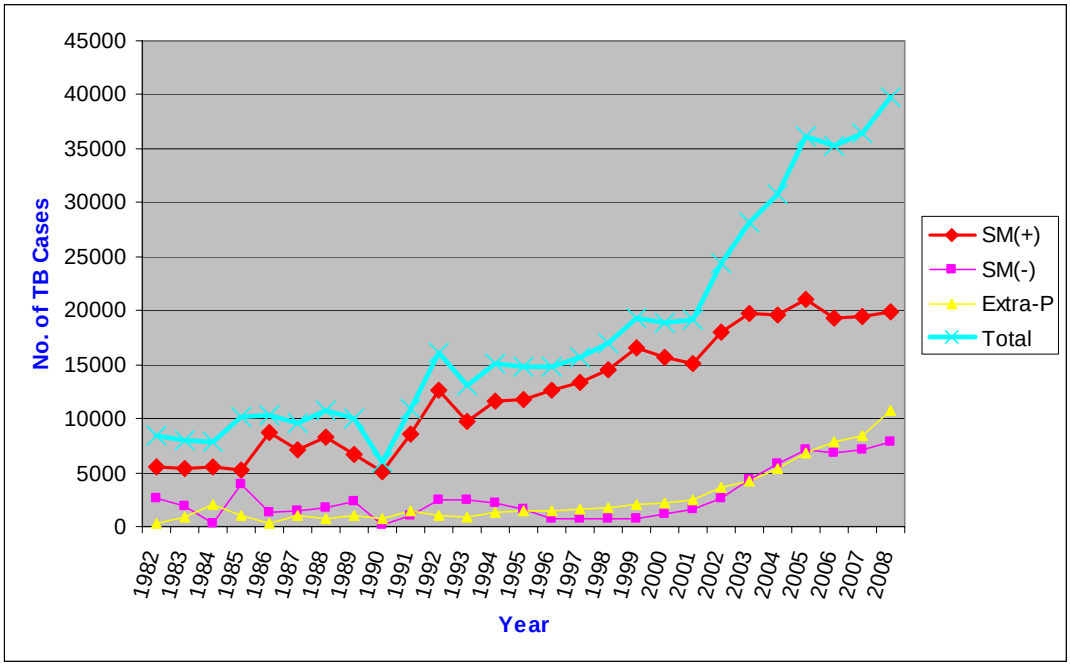
Case Detection in 2008	Number of TB cases
New smear positive pulmonary TB	19,860
Relapse	542
Failure cases	50
Return After Default	20
New smear negative pulmonary TB	7,847
New extra pulmonary TB	10,678
Other Cases	823
Total (all form of Tuberculosis)	39,820

According to the above TB case notification, the case notification rate of new smear positive pulmonary TB in 2008 is 69 % (19,860 new smear positive cases have detected compared to the estimated new smear positive cases 28,810).

The table below shows the age and sex distribution of the new smear positive pulmonary TB detected in 2008.

Age	0-14	15-24	25-34	35-44	45-54	55-64	> 64	Total	%
M	49	920	1570	2040	2117	1746	1683	10125	51%
F	72	808	1403	1809	2093	1943	1607	9735	49%
Total	121	1728	2973	3849	4210	3689	3290	19860	100%
%	1%	9%	15%	19%	21%	19%	17%	100%	

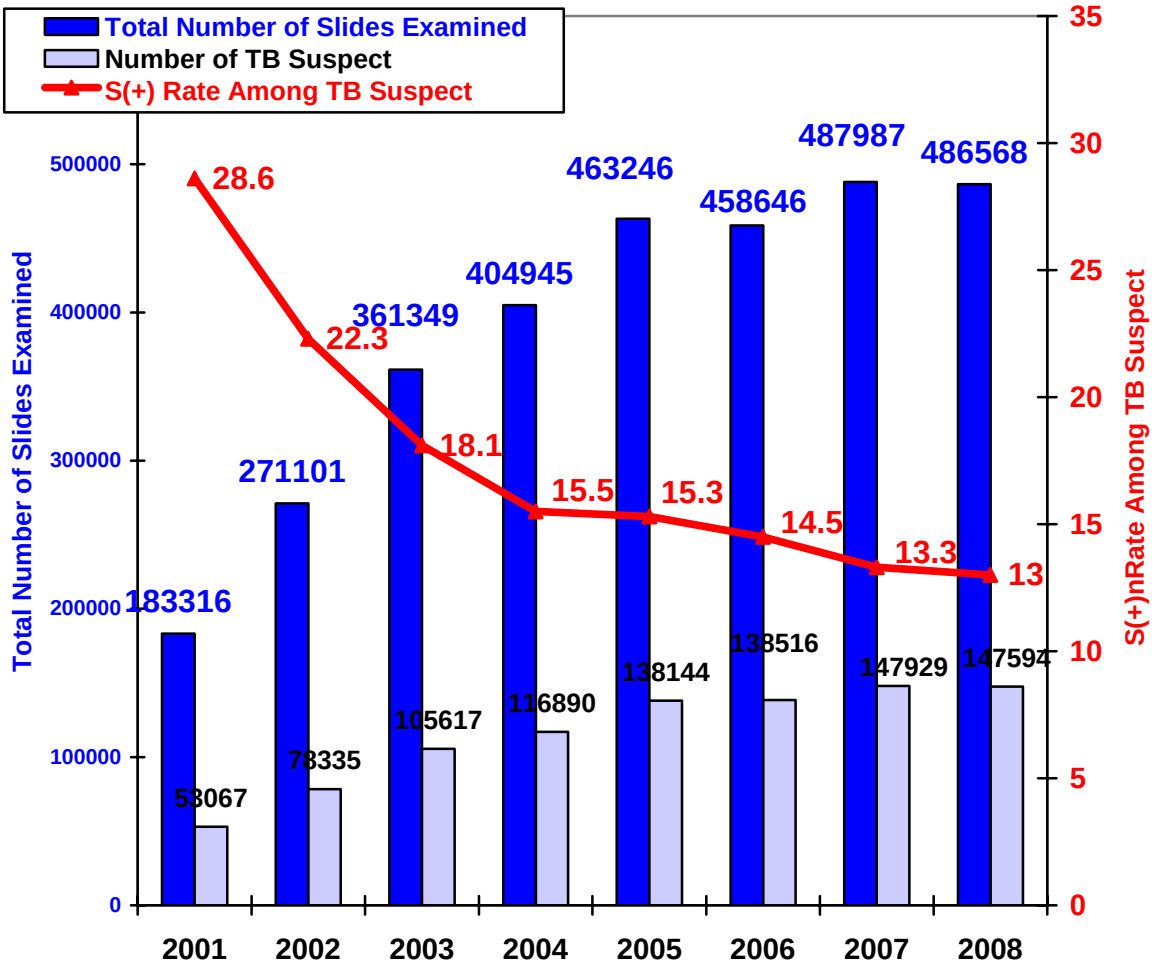
TB Cases Notification, 1982-2008



2. Diagnosis by bacteriological examination:

The total slide number that National Tuberculosis Program used for TB smear examination in 2008 is 486568 (detection and control) in which slides of detection are 433840. The positive rate among smear detection is 13%.

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 4.2%, false negative 2.1%, and agreement rate 97.6% in this first semester 2008.



3. Sputum Conversion rate at month 2 :

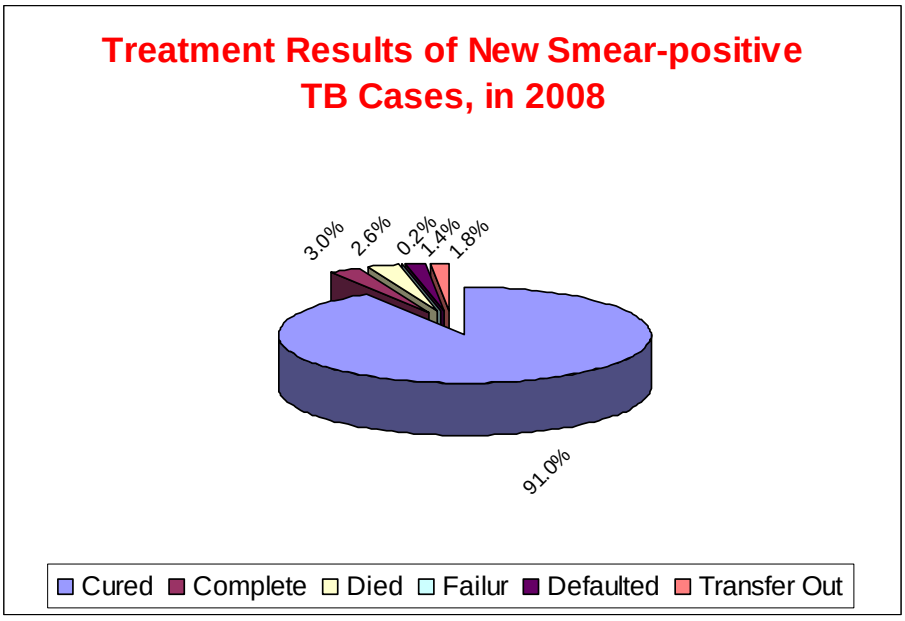
The Conversion rate at month 2 from sputum positive to negative is 95% in 2008.

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 (2007).

For 19,579 new smear-positive TB patients that received Cat-1 (2RHEZ/4RH) treatment regimen, the treatment results in 2008 were as follows (see table2 in the annex for the details by province).

- Cured : 91 %
- Treatment completed : 3.0%
- Died : 2.6 %
- Failure : 0.2 %
- Defaulted : 1.4 %
- Transferred out : 1.8 %



5. DOTS provided by CENAT in Phnom Penh :

CENAT provided DOTS to 738 TB patients in Phnom Penh in 2008. Of those, 286 were Home Care DOT, 157 Ambulatory DOT and 295 Hospitalized DOT. Moreover, CENAT diagnosed 23 MDR-TB and all of them received treatment from MDR-TB service.

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.

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

Pilot Phase of DOTS Expansion :
in September 1999, 9 health centers were piloted in Ambulatory DOT.

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 841 health centers nationwide.

- By the end of 2005, the National TB Control Programme expanded DOTS to 853 health centers and 40 health posts nationwide. This is a great achievement of the programme.
- In summary, in 2008, there are 1066 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 taking TB drug everyday at Health Center but for only less severe patients and to ensure that TB patients taking TB drug correctly, completely and to support the implementation of the new 6 month treatment regimen, 4 FDCs especially in the continuous phase etc.

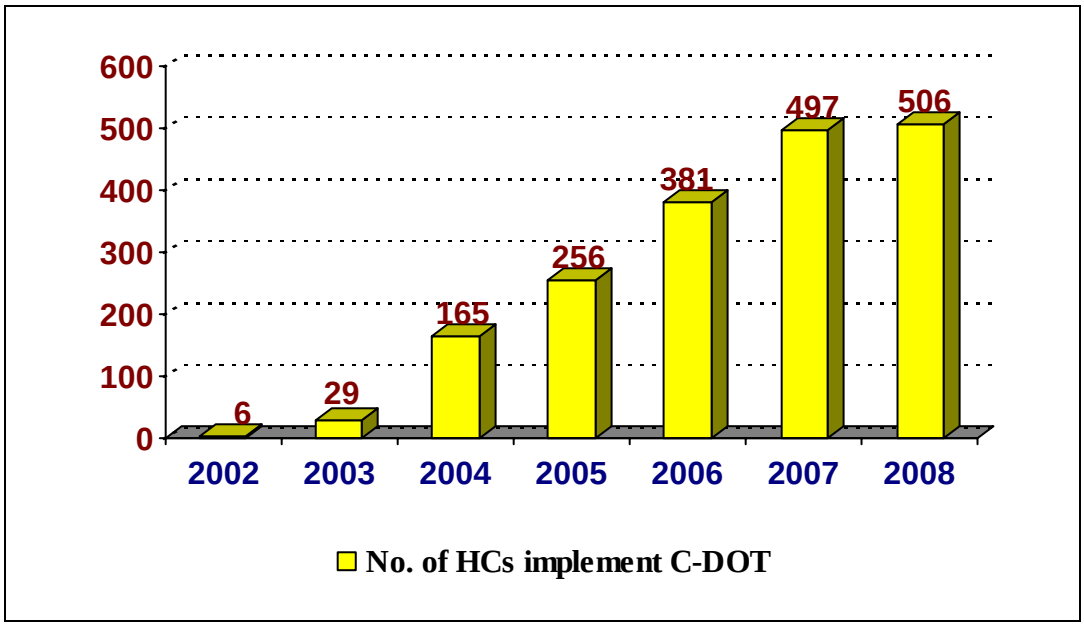
2. Background of Community DOTS

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.

This year 2008, The total Health Centers implement Community DOTS are 506 HCs in which the Health Centers expanded was 6 HCs.

3- Expansion of CDOTS Health Center



Through this Chart :

- By 2002, 6 health centers were expanded in C-DOT
- By 2003, 23 health centers were expanded in C-DOT.
- By 2004, 136 health centers were expanded in C-DOT.
- By 2005, 91 health centers were expanded in C-DOT.
- By 2006, 125 health centers were expanded in C-DOT.
- By 2007, 116 health centers were expanded in C-DOT.
- By 2008, 8 health centers were expanded in C-DOT.

In summary, 506 HCs cumulatively have been implementing Community DOT (C-DOT) in 42 ODs by the end of 2008.

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 (1066), 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 2008 support by NGOs

In 2008, There are 9 implementers opereating C-DOTS in 506 HCs as shown in the table below:

Name of C-DOTS implementers	No of supported HCs
RHAC	138
RACHA	130
CHC	70
PFHAD	56
SCA	50
JICA	28
CARE	13
CRS	11
PK	10
Total	506

7. Plan of GFATM in Round 7 (Starting date from April 2009)

A Proposal Round 7 to GFATM (2009-2014) has been approved and the target as following :

N0	Province	Operational District	# of Health Centers	NGOs
1	Svay Rieng	Svay Rieng	10	CHC
		Chiphou	6	CHC
2	Kandal	Takmao	15	CHC
		Ksach Kandal	9	CHC
		Por nhealeu	10	CHC
		Kean Svay	17	CHC
		Koh thom	12	CHC
		Ang snoul	8	CHC
		Muk kampoul	7	CHC
		Saang	12	CHC
3	Kampot	Kampong trach	12	CHC
4	Battambang	Thmarkol	8	CRS
5	Pailin	Pailin	4	CRS
6	Uddor meanchey	Samrong	14	CRS
7	Kampong som	Kampong som	10	CATA
8	Kampong Speu	Uddong	9	CATA
9	Kampong chhnang	Kampongchhnang	15	HEAD
		Boribo	8	HEAD
		Kampong tralach	11	HEAD
10	Prey Veng	Kamchay mear	11	HEAD
		Neak leung	17	RHAC
		Peareang	16	HEAD
		Kampong trabek	11	RHAC
		Preh sdach	9	RHAC
		Prey Veng	16	HEAD
		Mesang	10	HEAD
11	Preh Vihea	Preh Vihea	12	HU
12	Seam Reap	Soth nikum	7	PFHAD
13	Kampong thom	Kampong thom	21	PFHAD
		Stong	10	PFHAD
14	Kratie	Chhlong	10	PFHAD
		Kratie	12	PFHAD
15	Stung treng	stung treng	10	PFHAD
16	Phnum Penh	Cheung	5	SHCH

17	**Kampong**	Kg Cham-Kg Seam	22	FHI
		Cheung Prey	14	SCA
		Chamkaleu	13	FHI
		Oreang Ov	8	SCA
18	**Takeo**	Ang Rokar	9	RHAC
		Kiri Vong	15	RHAC
19	**Ratanakiri**	Ratanakiri	6	VORORT
	Total		**461**	

8- Constaints and Challenges

- The implementation Quality of Community DOTS: HC staff's capacity is still limited to arrange CDOT, 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 seasonal to earn their live, without communicating with HC staff.
- Motivation the HC's staff and OD TB supervisors is limited
- The co-infection of TB / AIDS.

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 have been conducted TB/HIV training to 16 Operational Districts more in 2008. Total number of TB/HIV trained OD is 68 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, Modulkiry, Ratanakiry, Angkorchey, Bakan, Preah Sdach, Pear Raing, Angsnoul, Mouk Kampoul, Oraing Ov, Krauchma, Prey Kabas and Bati ODs.

2. Clinical TB/HIV guideline development and training

In good collaboration with developing partners, FHI, US-CDC, MSF, CHC, WHO, JICA, URC,HOPE, and other partners, CENAT and NCHADS have developed TB/HIV clinical management guidelines and training curriculum for medical doctors, medical assistants who are currently working at TB ward at referral hospital, national pediatric hospital and NGOs. The clinical TB/HIV clinical management guidelines will be approved in 2009.

In 2008, the 5 day-training course of TB/HIV clinical management were conducted for participants from Bantheay Meanchey, Battambang, Pailin, Pursat, Kg Chhnang, Kg Cham, Kratie, CENAT, National Pediatric Hospital, Kossomak Hospital, Chhouk Sar (NGO clinic where TB screening and ART are introduced), Takeo and Phnom Penh. 4 batches (105 medical health staff) were trained on the TB/HIV clinical management.

The 5-day training covers:

a. communication skills for patients and health care providers
b. Epidemiology and pathogenesis of TB/HIV
c. Pulmonary TB
d. Extra-pulmonary TB
e. TB/HIV prevention

f. Treatment strategy
g. Drug interaction (TB drugs and ARV drugs)
h. Diagnostic procedure
i. X-ray reading for complicated cases
j. Drug side effect
k. Childhood TB/HIV
l. MDR TB in HIV patients
m. Special circumstances
n. TB Immune Reconstitution Inflammatory Syndrome (IRIS)

In order to evaluate the participants knowledge improvement, the pre-test and post test are introduced.

3. Revised National Framework for TB/HIV collaboration

A revised framework to address TB/HIV co-infection in the Western Pacific Region is officially released. During National Workshop on TB/HIV collaborative activities, this WHO revised framework was presented and the recommendation for modification for the existing Cambodia TB/HIV framework was made in order to adapt the need of Cambodia context and to be relevant to current situation. Technical Working Group for TB/HIV has drafted the revised framework for TB/HIV collaboration and will get approved in 2009.

The content of the framework covers

a. Introduction and background for TB/HIV collaboration,
b. HIV screening and Diagnosis among TB patients
c. 3Is (Intensified TB case finding among PLHA, INH Preventive Therapy, and Infection Control)
d. Main recommendation on treatment of TB/HIV co-infection (including CPT)
e. TB/HIV co-infection in special groups: Children and closed setting and IDU

f. Coordination, roles, and responsibilities of HIV and TB programs at different levels (including national, provincial, OD, facility and community level)
g. Supplies and logistics management
h. Monitoring and Evaluation
i. Annexes

4. JICA also supported some activities for TB/HIV collaboration

Supported the TB/HIV activity in Phnom Penh

- ✓ HIV testing at HCs by selected TB staff from each OD, so-called TB/HIV coordinators
- ✓ Supervision of TB/HIV activity at HC level by TB/HIV coordinators.
- ✓ Support the activities of counseling and testing for HIV at CENAT
- ✓ CENAT Afternoon clinic (TB screening clinic for PLHA)
- ✓ Quarterly TB/HIV stakeholder workshop

Since stared these above mentioned activities, the collaborative TB/HIV situation in PNP have been improved. Nowadays, about 98% of TB patients who does not know their HIV status receive HIV test during TB treatment and most of the HIV+ TB patients can get HIV services like CPT and OI/HBCT.

Supported the TB/HIV stakeholder meeting at 4ODs

JICA have supported TB/HIV stakeholder quarterly meeting at 4ODs. This year, the OD TB supervisors have the capacity to conduct the quarterly TB/HIV meeting regularly at their own OD by themselves. Theses ODs are Kien Svay, Koh Thom, Kampong Tralach and Boribo. All the stakeholders got together and discussed the problems and its solutions in the meeting. After the meeting, they tried to improve their activity and number of TB patients who went to VCCT has been increased.

Developed new IEC materials for TB/HIV activity

In addition to the 3 kinds or TB/HIV leaflets developed in 2006, JICA developed the flipchart and the poster about TB/HIV. They have been distributed to each province.

5. **National TB/HIV Conference:** The two national programs in good collaboration with the Development Partners conducted the second National Workshop on Collaborative TB/HIV activities from 13th -14th August 2008. It is a 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:
    1. Review TB/HIV activities (with different aspects: TB screening among PHA and HIV screening among TB patients and collaboration mechanism, TB/HIV joint work plan…)
    2. Share experience of TB/HIV collaboration (good/challenge…)
    3. Present the revised WHO TB/HIV framework (updated information from TAG meeting at Tokyo) and Cambodian SOP on TB/HIV collaboration
    4. Recommendation for TB/HIV Collaboration improvement

Participants to be invited are PHD directors, Provincial TB Supervisors, PAOs, OD TB supervisor and CoC coordinating and NGOs and partners working in the field of TB/HIV with the total number of around 280.

The Technical Working Group members are agreed that the participants will be divided into 4 groups based on geographic, epidemiological situation and their experiences. These groups will discus on the whole afternoon session with the topics as follow:

1/-PLHIV referred for TB screening and Treatment and OI/ART patients screened for TB including roles of culture and CXR in TB screening

2/- TB patients referred for HIV testing (option 1 & 2)

-what are their experiences and what are the barriers? (no HBC, Transportation, NGO..)

-how to address these barriers?

3/- Other 2 Is,

-what is INH Preventive Therapy?

-what is Infection control?

4/-Monitoring and Evaluation issues

-what are the issues of recording of TB&HIV?

-How to share the reporting of the two programs?

-how do they use their information to improve performance and program improvement?

6. TB/HIV Data

HIV / AIDS Among TB Patients 2008									
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	9,474	8,648	4,149	3,736	128	3,608	358	283	165
2	9,499	8,803	4,810	4,372	100	4,272	314	343	183
3	9,930	9,247	5,396	5,223	120	5,103	322	354	195
4	10,917	10,244	5,608	5,314	83	5,231	285	274	190
Total	39,820	36,942	19,963	18,645	431	18,214	1,279	1,254	733

This data information presents TB/HIV activities in many provinces among 24 provinces due to the NTP register book contained the TB/HIV activity data, although there is still remaining operational districts not yet trained.

Based on the above table, 54% (19,963/36,924) of unknown HIV TB patients were referred for HIV testing, then out of them around 93% (18,645/19,963) tested for HIV at VCCT. The positive rate of HIV in TB patients who were referred and tested at VCCT is around 2.3% (431/18,645).

Since National TB control program get budget supports (from TBCAP, GFATM, CHC, JICA and other NGOs) for refer TB patients or refer TB patient blood to VCCT for HIV testing, number of TB patients is increasing. 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.

TB Among PLHA 2008								
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	2,800	1,794	1,661	217	148	189	548	14
2	2,144	937	1,567	137	116	155	408	22
3	2,558	929	1,431	97	166	199	426	15
4	2,009	1,150	1,321	80	216	264	565	15
Total	9,511	4,810	5,980	531	646	812	1,983	66

XI. Multi drug resistant TB (MDR-TB)

NTP collaborate with their partners to initiate the MDR diagnosis, treatment resulting in development of MDR TB guideline. These partners are as following:

- CHC
- MSF/Belgium
- MSF/France
- URC
- CDC/GAP
- Institute Pasteur (Cambodia)
- Mittapheap Cambodia-Soviet Hospital

In 2008, there are 6 places to provide MDR-TB treatment with 41 isolate rooms. These 6 health facilities are:

1. CENAT hospital
2. Mittapheap Cambodia-Soviet Hospital
3. Siem Reap Provincial Hospital
4. Battambang Provincial Hospital
5. Takeo Provincial Hospital
6. Kg Cham Provincial Hospital

Training and Workshop activities

In 2008, 3 training MDR-TB course provided to 89 participants. 2 workshop also were conducted.

MDR-TB patients and temporary treatment result

Institution	No of MDR-TB patient	Temporary treatment result						
		Cured	Completed	Died	Tr. out	Defaulter	Keep on treatment	Failure
MSF/B	11	0	0	1	0	1	9	0
MSF/F	20	2	2	1	2	0	13	0
CHC	71	4	0	6	0	6	55	0
Total	102	6	2	8	2	7	77	0

Challenges:

- Staff's capacity is still limited in MDR-TB management
- Number of Health staff in MDR-TB service is not enough
- Incentives for H staff working with MDR-TB patients is not appropriate
- Isolate room is not enough
- Few patients refuse to accept treatment
- Some patients refuse to receive treatment in hospital
- Some patient drop out their treatment

- Management on side-effect for MDR-TB patients is still limited
- Transportation means used to trace defaulter and supervise is not appropriate

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

Public-Private Mix DOTS is an intervention of DOTS Expansion of the National Tuberculosis Program. Since 2005 the National Tuberculosis Program in collaboration with JICA, URC and PATH 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. There have been 38 ODs in 11 provinces that is, Phnom Penh, Sihanuk ville, Kampong Cham, Kandal, Kampong Speu, Takeo, Battambang, Banteay meanchey, Siem Reap, Kratie and Pursat. The PPM-DOTS model just has started in Phase I. In Phase I, the private practitioners need to refer all the TB suspect case to the government HCs or RH to do 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,:

- number of drop out of referring TB suspects still high
- limitation of resources in data collection from private and public
- limitation of resources in supervision
- the current diagnosis is a little bit late for the patient
- motivation to service providers in both sectors.
- limitation of confidence on public facilities
- small scale of PPM-DOTS

In summary, the achievement related to case finding and treatment of tuberculosis in 2008 under PPM-DOTS activities are shown in the table below:

Suspect Referred	Received	BK+	BK-	EP	Total Case Detected	Total Cases treated
2030	1066	133	47	26	206	199

XIII. IEC and Advocacy

In 2008, the activities and achievements related to IEC and Advocacy conducted by NTP are as follows:

-Capacity building for TB staff on IEC: refresher training on communication skill 8
courses in 15 ODs.

-Quarterly workshop on review activities IEC all 24 provinces

-Workshop on ACSM strategies tuberculosis with NGOs

-Produce IEC materials and disseminate messages to the general population through various means such as radio, TV, newspapers, 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.

XIV. 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.

XV. Research

The National Tuberculosis Program (NTP) in collaboration with JICA TB Control Project, have conducted the 3rd round of National HIV sero-prevalence Survey among TB patients in November 2007. The results showed that the prevalence rate of HIV among TB patients nationwide is 7.8 %.

In 2008, the National Tuberculosis Program has prepared the protocol/procedures for conducting the 4th HIV sero- prevalence Survey among TB patients that will be conducted nationwide in July 2009.

XVI. 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.

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

XVII. Annexes

Case Detection rate by Provinces , year 2008

Table 1

Nº	Province	Case Detection Rate of New S(+) PTB
1	Kandal	63%
2	Svay Rieng	104%
3	Phom Penh	35%
4	Pursat	72%
5	Battambang	45%
6	Pailin	35%
7	BMC	62%
8	Siem Reap	73%
9	Oddar MC	75%
10	Kg Thom	95%
11	Takeo	86%
12	Kg Speu	83%
13	Kampot	73%
14	Kep	34%
15	Kg Som	41%
16	Koh Kong	33%
17	Prey Veng	113%
18	Kg Chhnang	79%
19	Kratie	46%
20	Kg Cham	60%
21	Stung Treng	83%
22	Preah Vihear	54%
23	Modulkiri	10%
24	Rattanakiri	21%

Table 5

TB Cases Notified by Operational District in 2008

Operational District (OD) of Province	AFB pos					AFB neg	EP	OTHER	
	New	Re	Fail.	RAD	ReTt				TOTAL
KANDAL :									
TAKMOV (OD)	230	3	0	0	3	328	263	20	844
SAANG(OD)	338	8	0	1	9	28	49	1	425
KOH THOM(OD)	245	0	0	0	0	124	21	9	399
KIEN SVAY(OD)	337	12	0	0	12	61	424	3	837
KHSACH KANDAL(OD)	105	0	0	0	0	17	145	0	267
MOUK KAMPOL(OD)	101	2	1	0	3	27	76	0	207
PONHEA LEU(OD)	117	3	0	0	3	17	38	0	175
ANG SNOUL(OD)	292	2	0	0	2	4	48	3	349
subtotal	**1,765**	**30**	**1**	**1**	**32**	**606**	**1,064**	**36**	**3,503**
SVAY RIENG									
SVAY RIENG (OD)	655	38	0	0	38	375	423	127	1,618
ROMEAS HEK(OD)	177	7	0	0	7	110	86	34	414
CHIPOU (OD)	275	7	0	0	7	254	169	52	757
subtotal	**1,107**	**52**	**0**	**0**	**52**	**739**	**678**	**213**	**2,789**
NATIONAL HOSPITAL									
CENAT	257	44	23	6	73	125	248	32	735
IOM	24	0	0	0	0	0	0	0	24
MDM	29	1	1	0	2	75	85	0	191
HOPE HOSPITAL	47	3	1	1	5	27	95	10	184
NORODOM SIAHNOUK	96	5	0	0	5	40	73	1	215
PREAH KET MELEAH	9	0	0	0	0	25	77	0	111
NATIONAL PEDIATRIQUE	2	0	0	0	0	50	44	0	96
subtotal	**464**	**53**	**25**	**7**	**85**	**342**	**622**	**43**	**1,556**
PHNOM PENH									
CENTER (OD)	50	0	0	0	0	67	55	0	172
NORTH(OD)	127	9	0	1	10	87	73	3	300
SOUTH(OD)	131	8	0	0	8	184	169	13	505
WEST(OD)	246	2	0	1	3	73	89	0	411
subtotal	**554**	**19**	**0**	**2**	**21**	**411**	**386**	**16**	**1,388**
PURSAT									
SAMPOVMEAS (OD)	406	17	0	0	17	157	313	20	913
BAKAN (OD)	219	3	0	0	3	75	108	19	424
subtotal	**625**	**20**	**0**	**0**	**20**	**232**	**421**	**39**	**1,337**
BATTAMBANG									
BATTAMBANG (OD)	355	7	4	0	11	113	338	11	828
THMAR KOUL (OD)	200	5	1	1	7	51	67	8	333
MAUNG RUSSEY (OD)	182	5	2	0	7	82	180	7	458
SAMPOEV LONE (OD)	134	3	0	0	3	38	25	3	203
SANG KE (OD)	150	2	1	0	3	38	36	0	227
subtotal	**1,021**	**22**	**8**	**1**	**31**	**322**	**646**	**29**	**2,049**
PAILIN CITY									
PAILIN (OD)	**55**	**0**	**0**	**1**	**1**	**33**	**153**	**3**	**245**

ANTI-TUBERCULOSIS ACTIVITIES BY PROVINCES, 2008 (NTP)

Table 3

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)	1,765	30	1	1	32	606	1,064	36	3,503	50%	1%	17%	30%	140	142	48	84	277
SVAY RIENG, 3 (OD)	1,107	52	0	0	52	739	678	213	2,789	40%	2%	26%	24%	229	240	153	140	578
PHNOM PENH 4 OD and National Hospital	1,018	72	25	9	106	753	1,008	59	2,944	35%	4%	26%	34%	77	82	57	76	222
PURSAT, 2 (OD)	625	20	0	0	20	232	421	39	1,337	47%	1%	17%	31%	157	162	58	106	337
BATTAMBANG, 5 (OD)	1,021	22	8	1	31	322	646	29	2,049	50%	2%	16%	32%	100	102	31	63	200
PAILIN, 1 (OD)	55	0	0	1	1	33	153	3	245	22%	0%	13%	62%	78	78	47	217	348
BANTEAY MEANC. 4 (OD)	923	19	1	0	20	498	342	60	1,843	50%	1%	27%	19%	136	139	73	50	272
SIEM REAP, 4 (OD)	1,434	28	1	2	31	1,141	882	81	3,569	40%	1%	32%	25%	160	163	127	98	398
ODORMEANCHEY,1 (OD)	304	1	2	0	3	28	66	9	410	74%	1%	7%	16%	164	164	15	36	221
KOMPONG THOM, 3 (OD)	1,316	20	0	0	20	155	230	10	1,731	76%	1%	9%	13%	209	212	25	36	274
TAKEO, 5 (OD)	1,599	33	3	0	36	691	778	58	3,162	51%	1%	22%	25%	189	193	82	92	375
KOMPONG SPEU, 3 (OD)	1,316	28	0	1	29	172	411	19	1,947	68%	1%	9%	21%	184	188	24	57	272
KAMPOT, 4 (OD)	937	47	0	0	47	309	339	42	1,674	56%	3%	18%	20%	160	168	53	58	286
KEP, 1 (OD)	27	1	0	0	1	13	19	0	60	45%	2%	22%	32%	76	78	36	53	168
KOMPONG SOM, 1 (OD)	181	4	0	0	4	88	171	7	451	40%	1%	20%	38%	91	93	44	86	226
KOH KONG, 2 (OD)	100	2	0	0	2	54	42	12	210	48%	1%	26%	20%	72	73	39	30	150
PREY VENG, 7 (OD)	2,355	72	2	1	75	822	1,597	46	4,895	48%	2%	17%	33%	249	256	87	169	517
KOMPONG CHHNANG, 3 (OD)	816	15	1	0	16	114	235	2	1,183	69%	1%	10%	20%	173	176	24	50	251
KRATIE, 2 (OD)	322	6	1	3	10	80	194	0	606	53%	2%	13%	32%	101	103	25	61	190
KOMPONG CHAM, 10 (OD)	2,207	66	3	1	70	906	1,276	91	4,550	49%	2%	20%	28%	131	135	54	76	271
STUNG TRENG, 1 (OD)	145	0	1	0	1	4	48	2	200	73%	1%	2%	24%	130	130	4	43	179
PREAH VIHEAR, 1 (OD)	203	3	0	0	3	62	55	1	324	63%	1%	19%	17%	119	121	36	32	190
MODULKIRI,1 (OD)	14	0	0	0	0	9	11	2	36	39%	0%	25%	31%	23	23	15	18	59
RATANAKIRI, 1 (OD)	70	1	1	0	2	16	12	2	102	69%	2%	16%	12%	47	47	11	8	68
24 PROVINCES	19,860	542	50	20	612	7,847	10,678	823	39,820	50%	2%	20%	27%	148	152	59	80	297

ANTI-TUBERCULOSIS ACTIVITIES BY PROVINCES, 2008 (NTP)

Table 4

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)	1	2	82	83	118	133	145	161	150	221	135	179	179	176	810	955	1,765
SVAY RIENG, 3 (OD)	3	2	48	40	75	72	111	130	115	155	91	111	75	79	518	589	1,107
NATIONAL HOSPITAL	0	1	41	38	77	45	75	29	46	24	30	15	26	17	295	169	464
PHNOM PENH, 4 (OD)	0	1	34	33	74	64	60	54	68	38	33	38	23	34	292	262	554
PURSAT, 2 (OD)	3	10	29	14	28	36	57	65	67	76	57	73	54	56	295	330	625
BATTAMBANG, 5 (OD)	4	5	38	32	102	68	124	75	154	88	111	75	98	47	631	390	1,021
PAILIN, 1(OD)	0	2	4	1	4	5	11	4	7	4	3	3	2	5	31	24	55
BANTEAY MEANCHEY. 4 (OD)	1	1	43	36	95	62	109	55	146	89	101	78	50	57	545	378	923
SIEM REAP, 4 (OD)	2	0	54	38	111	104	182	137	197	172	119	149	83	86	748	686	1,434
ODORMEANCHEY 1 (OD)	0	1	15	18	31	20	49	24	46	25	31	20	13	11	185	119	304
KOMPONG THOM, 3 (OD)	4	6	69	55	125	118	138	128	117	137	107	106	113	93	673	643	1,316
TAKEO, 5 (OD)	0	2	52	56	114	108	126	145	142	147	155	211	146	195	735	864	1,599
KOMPONG SPEU, 3 (OD)	2	8	47	74	91	98	124	112	153	136	131	111	98	131	646	670	1,316
KAMPOT, 4 (OD)	0	0	57	32	67	41	94	61	104	97	91	76	116	101	529	408	937
KEP, 1 (OD)	0	0	2	2	1	2	3	3	3	2	1	2	4	2	14	13	27
KOMPONG SOM, 1 (OD)	1	0	18	13	19	10	33	11	17	11	9	12	13	14	110	71	181
KOH KONG, 2 (OD)	0	1	2	4	9	8	10	7	18	9	9	10	7	6	55	45	100
PREY VENG, 7 (OD)	12	16	88	93	149	168	199	273	186	299	186	303	196	187	1016	1339	2,355
KOMPONG CHHNANG, 3 (OD)	1	1	32	38	57	47	76	77	84	97	70	82	82	72	402	414	816
KRATIE, 2 (OD)	2	0	12	2	34	25	40	19	36	36	32	31	38	15	194	128	322
KOMPONG CHAM, 10 (OD)	12	13	132	97	166	141	219	188	204	197	202	221	221	194	1156	1051	2,207
STUNG TRENG, 1 (OD)	0	0	9	1	7	7	15	14	24	9	17	13	19	10	91	54	145
PREAH VIHEAR, 1 (OD)	1	0	10	7	11	14	26	27	23	18	18	16	17	15	106	97	203
MODULKIRI,1(OD)	0	0	0	1	1	2	6	0	0	0	1	1	2	0	10	4	14
RATANAKIRI, 1 (OD)	0	0	2	0	4	5	8	10	10	6	6	7	8	4	38	32	70
24 PROVINCES	49	72	920	808	1,570	1,403	2,040	1,809	2,117	2,093	1,746	1,943	1,683	1,607	10,125	9,735	19,860

Case Detection rate by Provinces , year 2008

Table 2

Nº	Province	Case Detection Rate of New S(+) PTB
1	Kandal	63%
2	Svay Rieng	104%
3	Phom Penh	35%
4	Pursat	72%
5	Battambang	45%
6	Pailin	35%
7	BMC	62%
8	Siem Reap	73%
9	Oddar MC	75%
10	Kg Thom	95%
11	Takeo	86%
12	Kg Speu	83%
13	Kampot	73%
14	Kep	34%
15	Kg Som	41%
16	Koh Kong	33%
17	Prey Veng	113%
18	Kg Chhnang	79%
19	Kratie	46%
20	Kg Cham	60%
21	Stung Treng	83%
22	Preah Vihear	54%
23	Modulkiri	10%
24	Rattanakiri	21%

Table 5 (continued)

TB Cases Notified by Operational District in 2008

Operational District (OD) of Province	AFB pos					AFB neg	EP	OTHER	
	New	Re	Fail.	RAD	ReTt				TOTAL
BANTEAY MEANCHEY									
MONGKOL BOREI (OD)	268	6	1	0	7	232	180	22	709
PREANEATPREAS (OD)	232	6	0	0	6	116	72	25	451
OCHROV (OD)	232	5	0	0	5	95	49	13	394
TMORPOUK(OD)	191	2	0	0	2	55	41	0	289
subtotal	**923**	**19**	**1**	**0**	**20**	**498**	**342**	**60**	**1,843**
SIEM REAP									
SIEM REAP (OD)	449	11	1	1	13	221	321	17	1,021
SOTNIKUM(OD)	381	6	0	1	7	125	119	32	664
ANGKOR CHUM	329	4	0	0	4	382	239	18	972
KRALANH (OD)	275	7	0	0	7	413	203	14	912
subtotal	**1,434**	**28**	**1**	**2**	**31**	**1,141**	**882**	**81**	**3,569**
ODOR MEANCHEY									
SAMRONG (OD)	**304**	**1**	**2**	**0**	**3**	**28**	**66**	**9**	**410**
KOMPONG THOM									
KG THOM (OD)	528	5	0	0	5	123	113	5	774
BARAY (OD)	539	10	0	0	10	10	87	1	647
STUNG(OD)	249	5	0	0	5	22	30	4	310
subtotal	**1,316**	**20**	**0**	**0**	**20**	**155**	**230**	**10**	**1,731**
TAKEO									
DAUNKEOV (OD)	462	3	0	0	3	169	370	0	1,004
BATI (OD)	238	13	0	0	13	95	104	32	482
PREY KABAS (OD)	497	1	0	0	1	256	119	12	885
ANGROKA (OD)	125	8	1	0	9	113	100	7	354
KIRIVONG (OD)	277	8	2	0	10	58	85	7	437
subtotal	**1,599**	**33**	**3**	**0**	**36**	**691**	**778**	**58**	**3,162**
KOMPONG SPEU									
KOMPONG SPEU (OD)	724	20	0	0	20	57	232	7	1,040
KARNG PISEY(OD)	401	7	0	1	8	65	111	11	596
OUDONG(OD)	191	1	0	0	1	50	68	1	311
subtotal	**1,316**	**28**	**0**	**1**	**29**	**172**	**411**	**19**	**1,947**
KAMPOT									
KAMPOT (OD)	240	3	0	0	3	29	74	3	349
ANGKOR CHEY(OD)	212	8	0	0	8	92	41	4	357
KOMPONG TRACH(OD)	206	14	0	0	14	64	56	6	346
CHHOUK(OD)	279	22	0	0	22	124	168	29	622
subtotal	**937**	**47**	**0**	**0**	**47**	**309**	**339**	**42**	**1,674**
KEP									
KRONG KEP (OD)	**27**	**1**	**0**	**0**	**1**	**13**	**19**	**0**	**60**
KOMPONG SOM									
PREASIHANOUK(OD)	**181**	**4**	**0**	**0**	**4**	**88**	**171**	**7**	**451**

Table 5 (continued)

TB Cases Notified by Operational District in 2008

Operational District (OD) of Province	AFB pos					AFB neg	EP	OTHER	
	New	Re	Fail.	RAD	ReTt				TOTAL
KOH KONG									
SMUCH MEANCHEY(OD)	56	0	0	0	0	47	21	4	128
SRE AMBIL(OD)	44	2	0	0	2	7	21	8	82
subtotal	**100**	**2**	**0**	**0**	**2**	**54**	**42**	**12**	**210**
PREY VENG									
PREY VENG (OD)	528	35	0	0	35	147	275	6	991
KAMCHEY MEAR(OD)	307	4	0	1	5	31	255	7	605
PEARING(OD)	360	10	0	0	10	148	148	12	678
KG TRABECK(OD)	197	2	0	0	2	51	24	3	277
MESANG(OD)	284	1	1	0	2	129	280	4	699
PREAH SDACH(OD)	248	9	0	0	9	30	106	0	393
NEAK LOEUNG (OD)	431	11	1	0	12	286	509	14	1,252
subtotal	**2,355**	**72**	**2**	**1**	**75**	**822**	**1,597**	**46**	**4,895**
KOMPONG CHHNANG									
KG. CHHNANG (OD)	391	12	0	0	12	44	96	1	544
KG TRALACH (OD)	195	1	1	0	2	29	67	1	294
Bar Bo (OD)	230	2	0	0	2	41	72	0	345
subtotal	**816**	**15**	**1**	**0**	**16**	**114**	**235**	**2**	**1,183**
KRATIE									
KRATIE (OD)	215	4	0	1	5	58	166	0	444
CHHLAUNG(OD)	107	2	1	2	5	22	28	0	162
subtotal	**322**	**6**	**1**	**3**	**10**	**80**	**194**	**0**	**606**
KOMPONG CHAM									
KG CHAM (OD)	294	16	1	1	18	238	301	43	894
KRAUCH CHMAR (OD)	93	0	0	0	0	67	41	0	201
TBONG KHMUM(OD)	142	2	0	0	2	76	70	2	292
CHOEUNG PREY(OD)	393	24	0	0	24	210	396	14	1,037
SREY SANTHOR(OD)	202	7	0	0	7	51	34	12	306
CHAMCAR LEU(OD)	529	3	0	0	3	55	142	1	730
PREY CHHOR (OD)	141	5	0	0	5	34	73	5	258
PONHEA KREK(OD)	177	6	2	0	8	100	132	5	422
ORAING OV(OD)	127	3	0	0	3	43	53	4	230
MEMOT(OD)	109	0	0	0	0	32	34	5	180
subtotal	**2,207**	**66**	**3**	**1**	**70**	**906**	**1,276**	**91**	**4,550**
STUNG TRENG									
STUNG TRENG (OD)	**145**	**0**	**1**	**0**	**1**	**4**	**48**	**2**	**200**
PREAH VIHEAR									
TBENG MEAN CHEY(OD)	**203**	**3**	**0**	**0**	**3**	**62**	**55**	**1**	**324**
MONDOLKIRI									
SEN MONORUM(OD)	**14**	**0**	**0**	**0**	**0**	**9**	**11**	**2**	**36**
RATTANAKIRI									
BANLUNG (OD)	**70**	**1**	**1**	**0**	**2**	**16**	**12**	**2**	**102**
TOTAL	**19,860**	**542**	**50**	**20**	**612**	**7,847**	**10,678**	**823**	**39,820**

Table 6

Treatment Outcomes of New Smear Positive TB Cases by Operational District in 2008

Operational District (OD) of Province	patients	Cure	%	Complete	%	Death	%	Failure	%	default	%	Trans	%
KANDAL :													
TAKMOV (OD)	253	244	96%	3	1%	2	1%	0	0%	1	0%	3	1%
SAANG(OD)	295	289	98%	0	0%	2	1%	0	0%	4	1%	0	0%
KOH THOM(OD)	194	190	98%	1	1%	2	1%	0	0%	1	1%	0	0%
KIEN SVAY(OD)	395	356	90%	18	5%	8	2%	0	0%	11	3%	2	1%
KHSACH KANDAL(OD)	123	114	93%	4	3%	5	4%	0	0%	0	0%	0	0%
MOUK KAMPOL(OD)	90	86	96%	0	0%	1	1%	1	1%	2	2%	0	0%
PONHEA LEU(OD)	142	130	92%	2	1%	6	4%	0	0%	2	1%	2	1%
ANG SNOUL(OD)	323	319	99%	0	0%	3	1%	0	0%	1	0%	0	0%
subtotal	**1,815**	**1,728**	**95%**	**28**	**2%**	**29**	**2%**	**1**	**0%**	**22**	**1%**	**7**	**0%**
SVAY RIENG													
SVAY RIENG (OD)	666	631	95%	5	1%	14	2%	0	0%	10	2%	6	1%
ROMEAS HEK(OD)	223	214	96%	0	0%	5	2%	0	0%	1	0%	3	1%
CHIPOU (OD)	232	217	94%	5	2%	9	4%	0	0%	0	0%	1	0%
subtotal	**1,121**	**1,062**	**95%**	**10**	**1%**	**28**	**2%**	**0**	**0%**	**11**	**1%**	**10**	**1%**
NATIONAL HOSPITAL													
CENAT	290	234	81%	1	0%	7	2%	11	4%	10	3%	27	9%
HOPE HOSPITAL	45	21	47%	0	0%	5	11%	2	4%	6	13%	11	24%
Medecin Du Monde	33	30	91%	0	0%	1	3%	0	0%	1	3%	1	3%
IOM	117	116	99%	0	0%	0	0%	0	0%	0	0%	1	1%
NORODOM SIAHNOUK	78	14	18%	40	51%	9	12%	0	0%	3	4%	12	15%
PREAH KET MELEAH	20	20	100%	0	0%	0	0%	0	0%	0	0%	0	0%
NATIONAL PEDIATRIQUE	1	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%
subtotal	**584**	**436**	**75%**	**41**	**7%**	**22**	**4%**	**13**	**2%**	**20**	**3%**	**52**	**9%**
PHNOM PENH													
CENTER (OD)	56	48	86%	0	0%	3	5%	0	0%	4	7%	1	2%
NORTH(OD)	161	154	96%	0	0%	0	0%	0	0%	5	3%	2	1%
SOUTH(OD)	164	148	90%	1	1%	5	3%	0	0%	3	2%	7	4%
WEST(OD)	270	247	91%	16	6%	1	0%	1	0%	2	1%	3	1%
subtotal	**651**	**597**	**92%**	**17**	**3%**	**9**	**1%**	**1**	**0%**	**14**	**2%**	**13**	**2%**
PURSAT													
SAMPOVMEAS (OD)	502	474	94%	10	2%	13	3%	0	0%	3	1%	2	0%
BAKAN (OD)	224	212	95%	0	0%	3	1%	0	0%	5	2%	4	2%
subtotal	**726**	**686**	**94%**	**10**	**1%**	**16**	**2%**	**0**	**0%**	**8**	**1%**	**6**	**1%**
BATTAMBANG													
BATTAMBANG (OD)	359	316	88%	6	2%	11	3%	3	1%	13	4%	10	3%
THMAR KOUL (OD)	188	178	95%	0	0%	6	3%	0	0%	2	1%	2	1%
MAUNG RUSSEY (OD)	204	177	87%	6	3%	10	5%	1	0%	6	3%	4	2%
SANG KE (OD)	152	140	92%	2	1%	7	5%	0	0%	1	1%	2	1%
SAMPOVLOUN (OD)	147	131	89%	3	2%	3	2%	0	0%	6	4%	4	3%
subtotal	**1,050**	**942**	**90%**	**17**	**2%**	**37**	**4%**	**4**	**0%**	**28**	**3%**	**22**	**2%**
PAILIN CITY													
PAILIN (OD)	**57**	**32**	**56%**	**6**	**11%**	**1**	**2%**	**0**	**0%**	**15**	**26%**	**3**	**5%**

Table 6 (continued)

Treatment Outcomes of New Smear Positive TB Cases by Operational District in 2008

Operational District (OD) of Province	patients	Cure	%	Complete	%	Death	%	Failure	%	default	%	Trans	%
BANTEAY MEANCHEY													
MONGKOL BOREI (OD)	267	236	88%	4	1%	13	5%	0	0%	4	1%	10	4%
PREANEATPREAS (OD)	233	215	92%	8	3%	5	2%	1	0%	0	0%	4	2%
OCHROV (OD)	280	243	87%	6	2%	13	5%	1	0%	9	3%	8	3%
TMORPOUK(OD)	172	134	78%	23	13%	2	1%	1	1%	6	3%	6	3%
subtotal	**952**	**828**	**87%**	**41**	**4%**	**33**	**3%**	**3**	**0%**	**19**	**2%**	**28**	**3%**
SIEM REAP													
SIEM REAP (OD)	435	388	89%	0	0%	12	3%	2	0%	5	1%	28	6%
ANGKOR CHUM	308	265	86%	27	9%	4	1%	0	0%	8	3%	4	1%
SOTNIKUM(OD)	389	357	92%	11	3%	17	4%	0	0%	3	1%	1	0%
KRALANH (OD)	213	206	97%	2	1%	4	2%	0	0%	0	0%	1	0%
subtotal	**1,345**	**1,216**	**90%**	**40**	**3%**	**37**	**3%**	**2**	**0%**	**16**	**1%**	**34**	**3%**
ODOR MEANCHEY													
SAMRONG (OD)	**305**	**286**	**94%**	**5**	**2%**	**5**	**2%**	**1**	**0%**	**3**	**1%**	**5**	**2%**
KOMPONG THOM													
KG THOM (OD)	475	444	93%	1	0%	19	4%	0	0%	4	1%	7	1%
BARAY (OD)	519	486	94%	11	2%	15	3%	0	0%	5	1%	2	0%
STUNG(OD)	219	187	85%	22	10%	4	2%	0	0%	5	2%	1	0%
subtotal	**1,213**	**1,117**	**92%**	**34**	**3%**	**38**	**3%**	**0**	**0%**	**14**	**1%**	**10**	**1%**
TAKEO													
DAUNKEOV (OD)	401	328	82%	17	4%	25	6%	4	1%	8	2%	19	5%
BATI (OD)	219	191	87%	24	11%	2	1%	0	0%	0	0%	2	1%
PREY KABAS (OD)	347	338	97%	0	0%	1	0%	0	0%	0	0%	8	2%
ANGROKA (OD)	150	148	99%	0	0%	0	0%	0	0%	2	1%	0	0%
KIRIVONG (OD)	204	187	92%	6	3%	4	2%	3	1%	1	0%	3	1%
subtotal	**1,321**	**1,192**	**90%**	**47**	**4%**	**32**	**2%**	**7**	**1%**	**11**	**1%**	**32**	**2%**
KOMPONG SPEU													
KOMPONG SPEU (OD)	706	624	88%	21	3%	19	3%	0	0%	12	2%	30	4%
KARNG PISEY(OD)	422	395	94%	13	3%	8	2%	0	0%	3	1%	3	1%
OUDONG(OD)	197	177	90%	17	9%	0	0%	0	0%	2	1%	1	1%
subtotal	**1,325**	**1,196**	**90%**	**51**	**4%**	**27**	**2%**	**0**	**0%**	**17**	**1%**	**34**	**3%**
KAMPOT													
KAMPOT (OD)	211	207	1	0	0	3	0	0	0	0	0	1	0
ANGKOR CHEY(OD)	237	225	95%	0	0%	8	3%	0	0%	0	0%	4	2%
KOMPONG TRACH(OD)	208	197	95%	0	0%	9	4%	0	0%	0	0%	2	1%
CHHOUK(OD)	217	205	94%	0	0%	8	4%	0	0%	2	1%	2	1%
subtotal	**873**	**834**	**96%**	**0**	**0%**	**28**	**3%**	**0**	**0%**	**2**	**0%**	**9**	**1%**
KEP													
KRONG KEP (OD)	**44**	**28**	**64%**	**16**	**36%**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
KOMPONG SOM													
PREASIHANOUK(OD)	**200**	**179**	**90%**	**4**	**2%**	**8**	**4%**	**1**	**1%**	**1**	**1%**	**7**	**4%**

Table 6 (continued)

Treatment Outcomes of New Smear Positive TB Cases by Operational District in 2008

Operational District (OD) of Province	patients	Cure	%	Complete	%	Death	%	Failure	%	default	%	Trans	%
KOH KONG													
SMUCH MEANCHEY(OD)	80	44	55%	2	3%	10	13%	0	0%	8	10%	16	20%
SRE AMBIL(OD)	62	50	81%	6	10%	0	0%	0	0%	5	8%	1	2%
subtotal	**142**	**94**	**66%**	**8**	**6%**	**10**	**7%**	**0**	**0%**	**13**	**9%**	**17**	**12%**
PREY VENG													
PREY VENG (OD)	509	470	92%	12	2%	22	4%	0	0%	0	0%	5	1%
KAMCHEY MEAR(OD)	272	266	98%	1	0%	2	1%	0	0%	2	1%	1	0%
PEARING(OD)	392	381	97%	3	1%	7	2%	0	0%	0	0%	1	0%
KG TRABECK(OD)	226	226	100%	0	0%	0	0%	0	0%	0	0%	0	0%
MESANG(OD)	244	231	95%	1	0%	12	5%	0	0%	0	0%	0	0%
PREAH SDACH(OD)	219	211	96%	6	3%	0	0%	0	0%	2	1%	0	0%
NEAK LOEUNG (OD)	333	262	79%	53	16%	3	1%	1	0%	9	3%	5	2%
subtotal	**2,195**	**2,047**	**93%**	**76**	**3%**	**46**	**2%**	**1**	**0%**	**13**	**1%**	**12**	**1%**
KOMPONG CHHNANG													
KG. CHHNANG (OD)	332	305	92%	6	2%	16	5%	0	0%	2	1%	3	1%
BARBO (OD)	241	237	98%	0	0%	4	2%	0	0%	0	0%	0	0%
KG TRALACH (OD)	244	231	95%	1	0%	8	3%	0	0%	1	0%	3	1%
subtotal	**817**	**773**	**95%**	**7**	**0**	**28**	**0**	**0**	**0**	**3**	**0**	**6**	**0**
KRATIE													
KRATIE (OD)	200	186	93%	0	0%	6	3%	0	0%	4	2%	4	2%
CHHLAUNG(OD)	106	79	75%	12	11%	8	8%	0	0%	2	2%	5	5%
subtotal	**306**	**265**	**87%**	**12**	**4%**	**14**	**5%**	**0**	**0%**	**6**	**2%**	**9**	**3%**
KOMPONG CHAM													
KG CHAM (OD)	252	214	85%	11	4%	12	5%	1	0%	1	0%	13	5%
KRAUCH CHMAR (OD)	130	128	98%	0	0%	2	2%	0	0%	0	0%	0	0%
TBONG KHMUM(OD)	148	123	83%	12	8%	3	2%	0	0%	3	2%	7	5%
CHOEUNG PREY(OD)	385	346	90%	17	4%	10	3%	0	0%	9	2%	3	1%
SREY SANTHOR(OD)	188	164	87%	10	5%	4	2%	0	0%	7	4%	3	2%
CHAMCAR LEU(OD)	493	489	99%	1	0%	2	0%	0	0%	1	0%	0	0%
PREY CHHOR (OD)	175	162	93%	0	0%	7	4%	0	0%	3	2%	3	2%
PONHEA KREK(OD)	195	156	80%	19	10%	7	4%	6	3%	3	2%	4	2%
ORAING OV(OD)	112	101	90%	5	4%	1	1%	1	1%	4	4%	0	0%
MEMOT(OD)	84	78	84%	1	0%	2	5%	0	1%	0	4%	3	6%
subtotal	**2,162**	**1,961**	**91%**	**76**	**4%**	**50**	**2%**	**8**	**0%**	**31**	**1%**	**36**	**2%**
STUNG TRENG													
STUNG TRENG (OD)	**136**	**129**	**95%**	**2**	**1%**	**2**	**1%**	**0**	**0%**	**2**	**1%**	**1**	**1%**
PREAH VIHEAR													
TBENG MEAN CHEY(OD)	**165**	**149**	**90%**	**6**	**4%**	**9**	**5%**	**0**	**0%**	**0**	**0%**	**1**	**1%**
MONDOLKIRI													
SEN MONORUM(OD)	**23**	**15**	**65%**	**7**	**30%**	**1**	**4%**	**0**	**0%**	**0**	**0%**	**0**	**0%**
RATTANAKIRI													
BANLUNG (OD)	**51**	**40**	**78%**	**5**	**10%**	**4**	**8%**	**0**	**0%**	**2**	**4%**	**0**	**0%**
TOTAL	**19,579**	**17,832**	**91%**	**566**	**3%**	**514**	**3%**	**42**	**0%**	**271**	**1%**	**354**	**2%**

Table 7. Number of TB Cases Registered under NTP from 1982 to 2008

Year	Smear (+)			Smear (-)	Extra PTB	Total
	New	Relapse	Sub-total			
1982			5,579	2,663	233	8,475
1983			5,316	1,823	833	7,972
1984			5,507	316	2,007	7,830
1985			5,235	3,891	1,019	10,145
1986			8,715	1,295	271	10,281
1987			7,173	1,406	1,027	9,606
1988			8,246	1,714	731	10,691
1989			6,740	2,251	965	9,956
1990			5,132	163	672	5,967
1991			8,507	990	1,406	10,903
1992			12,685	2,491	972	16,148
1993	9,560	200	9,760	2,417	912	13,089
1994	11,058	540	11,598	2,195	1,319	15,112
1995	11,150	605	11,755	1,575	1,501	14,831
1996	12,065	607	12,672	708	1,477	14,857
1997	12,686	634	13,320	721	1,588	15,629
1998	13,865	705	14,570	705	1,671	16,946
1999	15,744	792	16,536	725	2,005	19,266
2000	14,826	814	15,640	1,108	2,144	18,892
2001	14,361	721	15,082	1,658	2,430	19,170
2002	17,258	789	18,047	2,852	3,711	24,610
2003	18,923	754	19,677	4,307	4,232	28,216
2004	18,978	645	19,623	5,800	5,415	30,838
2005	21,001	718	21,719	7,057	6,759	35,535
2006	19,294	691	19,985	6,875	7,800	34,660
2007	19,421	648	20,069	7,120	8,412	35,601
2008	19,860	542	20,402	7,847	10,678	38,927

XVIII. 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 has been increased to 69% in 2008, 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.

The National Tuberculosis Control Program would like to express deep thanks to:

- The Royal Government of Cambodia and the Ministry of Health for all the supports,
- 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,
- and local authorities, communities and other partners for their support and collaboration.

Director of CENAT

Mao Tan Eang, MD, MPH

Editor:

From National Tuberculosis Program:
Dr. Mao Tan Eang, Dr. Team Bak Khim, Dr. Huot Chan Yuda ,
Dr. Suong Sarun, Dr. Uong Mardy, Dr. Keo Sokunth,
Dr. Tieng Sivanna, Dr. Khun Kim Eam, Dr. In Sokhanya, Dr. Khloeung Phally,
Dr. Tan Kun Dara, Dr. Kien Sorya, Dr. Yos Bun Heng, Dr. Peou Satha,
Dr. Chay Sokunth, Dr. Nou Chanly, Dr. Chea Manith, Dr. Prum Chom Sayoeun.

From CENAT / JICA TB Control Project:
Dr. Nishiyama, Dr. Yoko TSURUGI,

From WHO/TBCAP: Dr. Jamie Tongsing
Photos by National TB Control Program.