



**SAARC Tuberculosis and HIV/AIDS Centre**

**Tuberculosis in the SAARC Region  
An Update 2007**

**SAARC Tuberculosis and HIV/AIDS Centre (STC)**

(Thimi, Bhaktapur)

P. O. Box No. 9517, Kathmandu, Nepal

Tel: 00977-1-6631048, 6632477, 6632601

Fax: 00977-1-6634379

E-mail: [saarctb@mos.com.np](mailto:saarctb@mos.com.np)

Website: [www.saarctb.com.np](http://www.saarctb.com.np)

# Tuberculosis Control in the SAARC Region

## - An update 2007

### 1. Introduction

South Asian Association for Regional Cooperation (SAARC) is an association for manifestation of the determination of the people of South Asia to work together towards finding solutions to their common problems in a spirit of friendship, trust and understanding and to create an order based on mutual respect, equity and shared benefits.

The SAARC comprises of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The TB control status of Afghanistan is included in this report for the first time.

SAARC Tuberculosis and HIV/AIDS Centre (STC) is a Regional Centre of SAARC, located in Kathmandu, Nepal. The Centre was established in 1992. The initial mandate of the centre was to work for prevention and control of TB & HIV related TB in the Region by coordinating the efforts of the National Tuberculosis Control Programs of the Member States. But later on its mandate has been extended to work for prevention & control of HIV/AIDS and TB/HIV co infection in the Region. Now, the centre has been working for prevention and control of TB and HIV/AIDS in the Region by coordinating the efforts of the National Tuberculosis Control Programs (NTPs) and National AIDS Control Programs (NACPs) of Member States.

One of the main functions of this centre is to collect, collate, analyze and disseminate relevant information in the field of TB and HIV/AIDS control in the Region and elsewhere. In this regard, the Centre has started to prepare and publish annual SAARC Regional epidemiological reports on TB control and HIV/AIDS Information and for dissemination of these to all Member States and other stakeholder working in TB and HIV/AIDS. Based on this information, the SAARC Member States progress towards Millennium Development Goals (MDGs) can be assessed.

The principal mechanism for achieving these impact targets is the treatment of patients with active TB, following the Stop TB Strategy. The New strategy embraces the fundamentals of TB control originally framed as DOTS, but extends the reach of control activities into other key areas. These include the well-known problems of multi-drug resistant TB or MDR TB (and now also extensive drug resistance TB) and of TB associated with the human immunodeficiency virus (HIV).

This report describes about TB situation in the SAARC Region and is the fifth (first in 2003) of its kind. The aim of this report is to chart the progress in TB control in the Region, particularly implementation of Directly Observed Treatment Short course (DOTS) strategy. This report presents the information on DOTS coverage, case notifications and treatment outcomes as per reports received from the Member States.

## 2. Global Situation of TB

There were an estimated 8.8 million new cases of TB in 2005, (136 per 100 000 population) including 3.9 million (60 per 100 000 population) new smear positive cases, 7.4 million in Asia and sub-Saharan Africa. A total of 1.6 million people (24/100 000) died of TB, including 195 000 patients infected with HIV. There were 14.1 million prevalent cases (217/100 000) on average. More than 90 million TB patients were reported to WHO between 1980 and 2005; 26.5 million patients were notified by DOTS programmes between 1995 and 2005, and 10.8 million new smear-positive cases were registered for treatment by DOTS programmes between 1994 and 2004.

A total of 4.8 million new cases of TB were notified from all sources in 2005. This represents 55% of the 8.8 million estimated new cases; new smear positive cases notified account for 62% of the 3.9 million estimated. Comparing different parts of the world, the African Region (23%), South-East Asia Region (35%) and Western Pacific Region (25%) together accounted for 83% of all notified new and relapse cases and similar proportions of new smear positive cases in 2005.

TB prevalence and death rates have probably been falling globally for several years. In 2005, however, the total number of new TB cases was still rising slowly, because the case load continued to grow in the African, Eastern Mediterranean and South East Asia region.

The total number of countries implementing DOTS increased steadily from 1995, rising a little closer to the maximum in 2005 (187 out of 212) All 22 HBCs have had DOTS programmes since 2000; many of which have been established for much longer. By the end of 2005, 89 % of the world's population lived in countries, districts and provinces of countries that had adopted DOTS.

The case detection rate of new smear positive cases in 2005 is 62%. Comparing the WHO regions, new smear positive case detection rates by whole country programme in 2005 were lowest in the Eastern Mediterranean Region (45%) and European Region (48%) and highest in the region of the Americas (80%), the south East Asia Region (64%) and the Western Pacific Region (78%) see table below. Only the Western Pacific Region met the 2005 target. In the three regions with the highest rate of case detection is– South East Asia, the Americas and the Western Pacific.

More than two million new smear positive cases were registered for treatment in DOTS programme in 2004. The cure rate among cases registered under DOTS worldwide was 77% and a further 7% completed treatment, giving a reported, overall treatment success rate of 84%, that is 1% below the 85% target set for the 2004 cohort. Documented treatment success rates varied from 74% in Europe and Africa, to 87% in South East Asia and 91% in the Western Pacific, the latter two regions having exceeded the 85% target (see table below). Death during treatment was most common in the African Region (7%), where a higher fraction of cases are HIV-positive, and in the European Region (7%), where a higher fraction of cases are drug resistant (eastern Europe) or occur among the elderly (western and central Europe). DOTS treatment success reached or exceeded 85% in eight HBCs and in 57 countries in total.

Treatment success rate in 2004 is 84%, which is just 1% below the target set for the year 2004 cohort. The cure rate among cases registered under DOTS worldwide was 77% and treatment completed was 7%. DOTS treatment success reached or exceeded 85% in eight HBCs.

**Table 1: Global Case notifications, Case Detection and DOTS Coverage, 2005**

WHO Regions	New and Relapse cases	New Sputum Smear positive	Case detection rate %	DOTS Coverage
African Region	1186800	550001	51	89
Region of Americas	227616	124788	80	88
Eastern Mediterranean Region	282945	112804	45	97
European Region	365346	96101	48	60
South East Asia Region	1789186	857371	64	93
Western Pacific Region	1274266	671719	78	98
<b>Global</b>	<b>5126159</b>	<b>2412784</b>	<b>62</b>	<b>89</b>

Source: WHO Global TB Report, 2007

**Table 2: Treatment outcomes for new smear positive cases (%), Global, 2004 cohort**

WHO Regions	Cured	Treatment completed	Died	Failed	Defaulted	Not evaluated	Treatment success
African Region	62	12	7	1.3	9.4	3.1	74
Region of Americas	60	19	5	1.1	6.1	5	80
Eastern Medit. Region	72	11	2.9	1.2	7.7	2.8	83
European Region	59	14	6.8	6.7	6.5	3.4	74
South East Asia Region	83	3.6	4.2	2	5.9	0.3	87
Western Pacific Region	87	3.9	2.3	1	1.7	2.5	91
<b>Global</b>	<b>77</b>	<b>7.3</b>	<b>4.4</b>	<b>1.6</b>	<b>5.8</b>	<b>2</b>	<b>84</b>

Source: WHO Global TB Report, 2007

### 3. Situation of Tuberculosis Control in Asia

Asia has the highest burden of TB in the world. Out of the 22 high-burden TB countries reported by the WHO, 11 are in Asia: 1<sup>st</sup>. India, 2<sup>nd</sup>. China, 3<sup>rd</sup>. Indonesia, 5<sup>th</sup>. Bangladesh, 6<sup>th</sup>. Pakistan, 9<sup>th</sup>. Philippines, 13<sup>th</sup>. Viet Nam, 17<sup>th</sup>. Thailand, 19<sup>th</sup>. Myanmar, 21<sup>st</sup>. Cambodia and 22<sup>nd</sup>. Afghanistan. In Asia 4.5 million people develop TB every year. TB is the leading infectious disease killer in this continent. Three-fourths of TB patients in Asia develop active TB during their most productive years between the ages of 15 and 54 years old.

### 4. Situation of Tuberculosis Control in South East Asia

The South-East Asia Region (SEAR) has the highest burden of tuberculosis cases among all the WHO Regions with 4.8 million TB cases; this is almost one-third of the global tuberculosis burden. Every year 1.34 million new cases of active TB appear and over 500 000 deaths due to this disease. Over half a million people continue to die of the disease every year in the Region, one person every minute. Most cases in the 15-54 year age group. Five countries—Bangladesh, India, Indonesia, Myanmar and Thailand, together contribute to 95% of the regional burden.

DOTS coverage defined as the population living in administrative areas - achieved 93% in 2005 and approached 98% by March 2006 (when India achieved nationwide coverage).

Of all cases notified worldwide to WHO in 2004, 36% occurred in the SEA Region. In 2005, more than half (51%) of new cases registered in DOTS areas were smear positive, reflecting a continued focus on quality smear microscopy. The case-detection under DOTS also further increased to reach 64% in 2005 for new smear positive, surpassing the global case-detection rate.

The treatment success rate for patients registered under DOTS in 2004 cohort was 87%.

## 5. Situation of Tuberculosis Control in SAARC Region

Tuberculosis is one of the major public health problems in the SAARC Region with immense socio-economic impacts. Almost 50% the adult population of this Region has already been infected with *Mycobacterium tuberculosis* and is at risk of developing tuberculosis disease. In the year 2006 a total 1.7 million all types of TB cases were notified (117/100000). This represents 69.3% of the 2.5 million estimated cases; the 0.7 million new smear positive cases notified (49/100000) account for 65.2% of the 1.1 million estimates.

According to this estimate SAARC Region was bearing 31.0% of the total global new sputum smear positive cases (with 23% of population share). India, Bangladesh, Pakistan and Afghanistan are occupying the 1<sup>st</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 22<sup>nd</sup> positions in the list of 22 high burden nations {*according to estimated incidence (absolute number) of TB: high burden countries.2005*} with India revealing the highest (21.0%) global absolute burden of TB. These 4 SAARC nations account for 28.5% of the total global absolute burden of TB.

Average of 4.1 % died from TB in the SAARC Member States in the year 2006. More than 75% of these cases and deaths occur among 15 - 54 years age group, economically the most productive age group. As a result the social and economic loses due to TB are huge.

By adopting DOTS strategy, this Region has started to show success in TB control. In the year 2006, SAARC Region has covered over 99.5% of its population with DOTS and detected 65.2% % of the total estimated new smear positive cases. This Region has already achieved the target of 85% (now 87.0%) treatment success rate of detected new smear positive cases. Major challenges are however there in control of TB, such as

- Sustaining quality in diagnosis and case management
- Expanding DOTS services in other public sector, private sector and hard to reach areas
- Improving the quality of implementation and making it more accessible to people in order to increase case detection
- Strengthening human resources in terms of numbers and technical capacity
- Strengthening laboratory network and improving EQA and supervision
- Building infrastructure and technical capacity for culture and DST for management of MDR TB
- Establishing effective coordination between NTP and NACP
- Tackling migration & cross border issues

There is obviously commitment within this Region for achieving TB control targets for MDGs.

### **Economic and Social Costs associated with TB**

TB is a major barrier to social and economic development. More than 90% of global TB cases and deaths occur in the developing world, where 75% of cases are within the economically most productive age-group (15-54 years). An adult with TB (in the developing world) loses on an average 3-4 months of work time and the economic losses to the family and community are staggering. The estimates suggest a loss of 20-30% of annual household income and, if the person dies of the disease, an average of 15 years of lost income. Within India, according to study every year, more than 300,000 children are forced to leave school because of their parents' illness due to TB, and approximately 100,000 women lose their status as mothers and wives i.e., abandoned by their families because of TB illness.

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## 6. Progress in TB Control

This chapter reviews the progresses made in TB control in Member States of SAARC. It provides an analysis of the compiled country reports submitted by NTP on the numbers of cases registered in 2006 and reporting on the treatment outcomes of patients registered in 2005.

### 6.1. DOTS Coverage

The remarkable progresses have been made with Directly Observed Treatment Short-course (DOTS) since its inception in 1993 by the Region. By 1996 all Member States started DOTS strategy for TB control.

**Table 3: Adoption of DOTS by SAARC Member States**

Country	Year of adopting DOTS strategy
Afghanistan	1997
Bangladesh	1993
Bhutan	1996
India	1997
Maldives	1994
Nepal	1996
Pakistan	1995
Sri Lanka	1994

**Table 4: DOTS Population Coverage in SAARC States, 2006**

Country	Estimated Population 2006	DOTS Coverage %	Covered Population
Afghanistan	29,863,000	81	24189030
Bangladesh	140701449	99	139294434
Bhutan	672,425	100	672425
India	1,114,200,000	100	1114200000
Maldives	298,968	100	298968
Nepal	25,665,984	100	25665984
Pakistan	161164000	100	161164000
Sri Lanka	20,473,000	98	20063540
<b>Total</b>	<b>1493038826</b>	<b>99.5</b>	<b>1485548381</b>

In 2006, over 99.5% percent of population of the Region was covered with DOTS (Table 4). Population coverage in 1997 was merely 11%, since then it has been increasing and reached 99.5% in 2006.

DOTS coverage within SAARC region has steadily increased since 2000.

**Table 5: DOTS Population Coverage (%); SAARC Countries, 1997-2006**

Countries	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Afghanistan									81	
Bangladesh	80	90	90	92	95	95	99	99	99	99
Bhutan	0	100	100	100	100	100	100	90	90	100
India	2.3	9	14	30	45	52	67	84	84	100
Maldives	100	100	100	100	100	100	100	100	100	100
Nepal	17	17	75	84	84	89	94	100	100	100
Pakistan	0	8	8	9	24	45	63	79	79	100
Sri-Lanka	94	95	95	64	64	73	74	88	88	98
Regional	11	18	23	36	49	57	71	84	90	99

Figure 1: DOTS Coverage in SAARC Region, 1997-2006

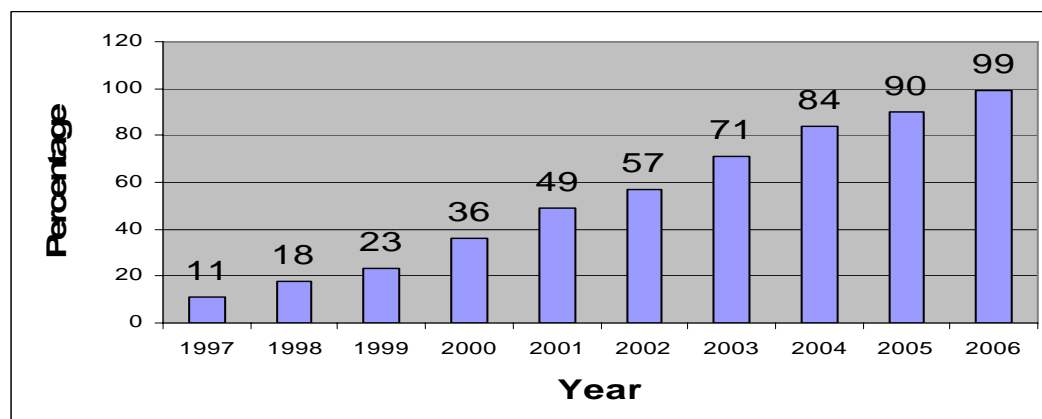
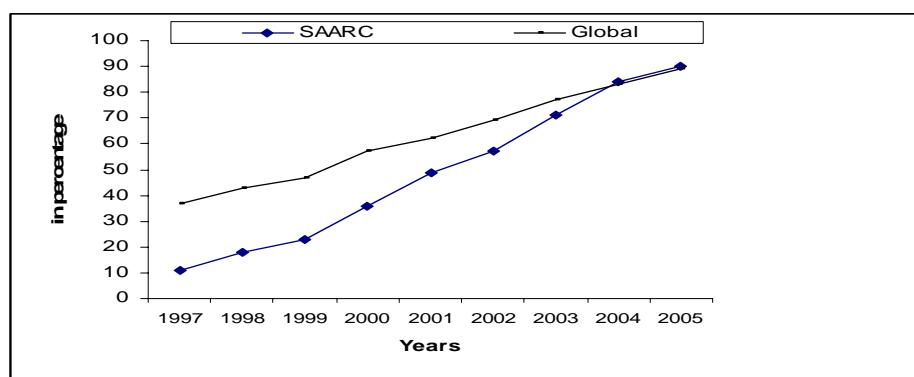


Figure 2: Trend of DOTS Coverage in SAARC and Global, 1997-2005



The Global DOTS coverage was higher than SAARC region before 2004. While from 2004 onwards the DOTS coverage of SAARC increased compared to Global figure.

## 6.2. Notifications and Case Detections

Table 6: DOTS coverage, case detection and treatment outcome, SAARC Region, 2006

Country	Population	Covered by DOTS (%)	Estimated		Notified		Case Detection Rate (%)		Treatment outcome (2005) (%)		
			All types	New sputum smear +ve.	All types	New sputum smear +ve.	All New	New sputum smear +ve	Cure Rate	Treatment Completed	Treatment Success
Afghanistan	29,863,000	81	50249	22611	21844	9949	42.0	44.0	79.0	10.0	89.0
Bangladesh	140701449	99	321996	144880	145164	101988	45.0	71.0	90.6	0.9	91.5
Bhutan	672,425	100	2219	998	934	312	NA	74.1	80.4	7.0	87.4
India	1,114,200,000	100	1851661	826663	1397498	553660	75.5	66.0	83.0	3.0	86.0
Maldives	298,968	100	155	70	100	53	64.5	82.5	84.8	0.9	85.7
Nepal	25,665,984	100	48842	21876	33207	14028	69.1	64.2	86.8	1.2	88.0
Pakistan	161164,000	100	280597	128931	173160	65391	63.0	51.0	74.0	13.0	87.0
Sri Lanka	20,473,000	98	12549	5645	9695	4868	77.2	86.2	79.2	7.1	86.3
Total	1493038826	99.5	2568268	1151674	1781602	750249	62.5	65.2	82.2	5.3	87.6

Source: NTP Reports 2006, from SAARC Member States except of Afghanistan



Of all cases notified worldwide to WHO in 2005, 32.3% occurred in the SAARC region. A total 1781602 cases (all types) were notified in 2006 in this region, of which 42.1% were new sputum smear positive cases.

Four of the 22 countries with the highest burden of TB namely India, Bangladesh, Pakistan and Afghanistan together notified 730988 new smear positive cases or 97.4 % of new smear positive cases notified in the Region. India alone accounted more than three fourth of all notifications in the SAARC region and continues to account for almost one fifth of the global burden of TB.

Figure 3: Distribution of notified TB cases in SAARC Member States, 2006

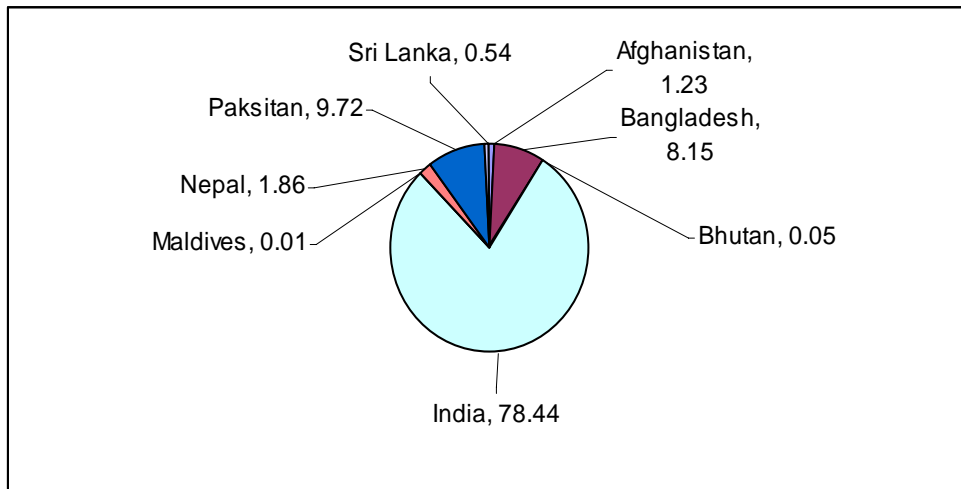
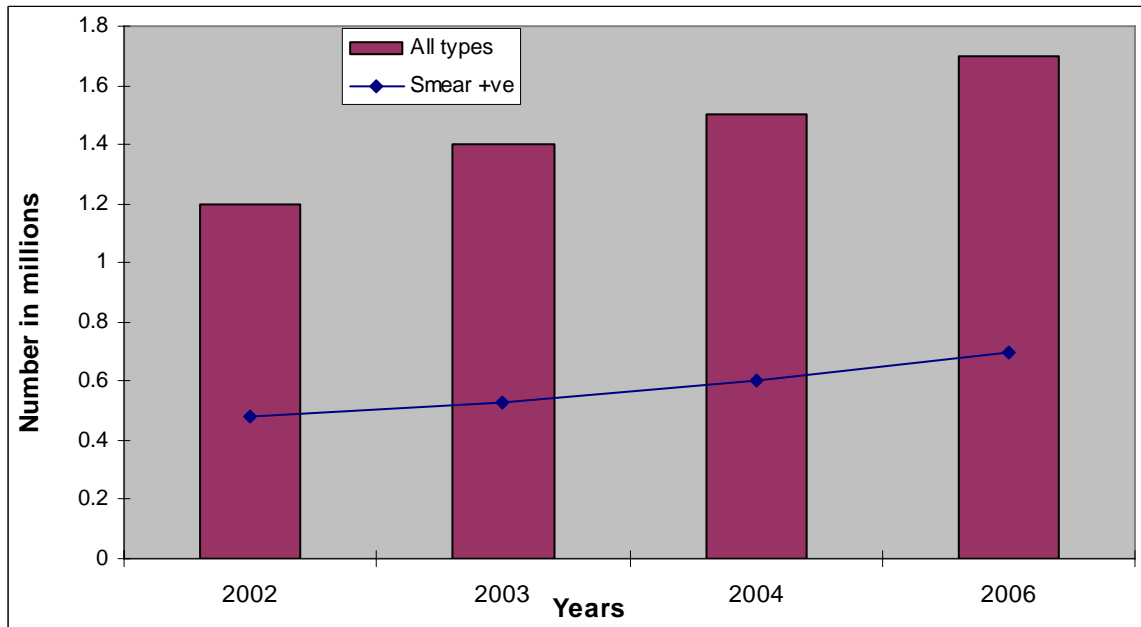
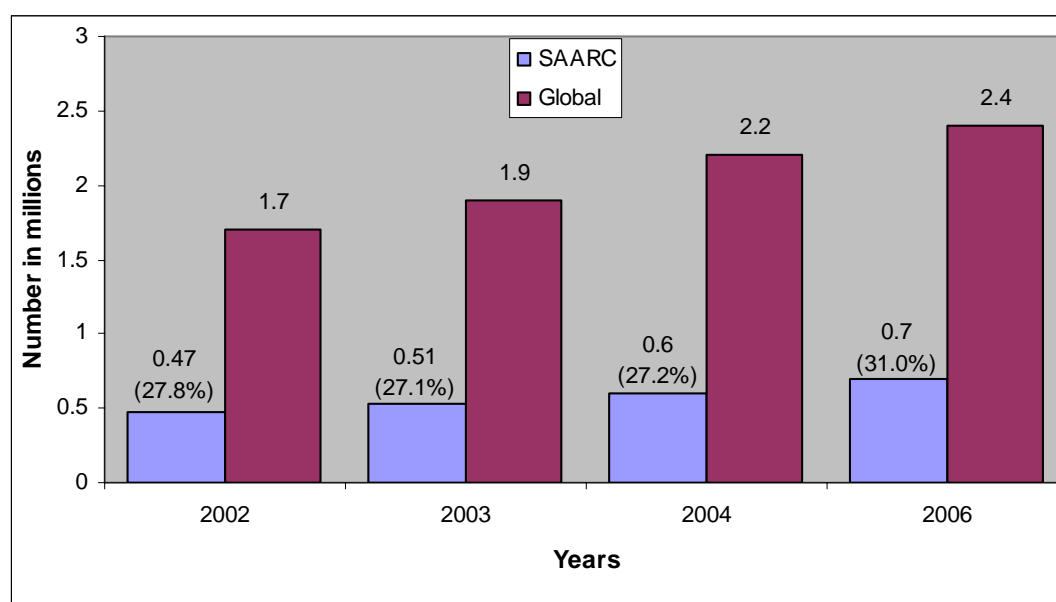


Figure 4. Trend of TB Notification rate (All cases & new smear positive cases) in SAARC region



There has been a gradual upward trend in overall notifications rates for all forms & sputum smear positive cases of TB till 2005, after which remain static, in this region. (Figure 4)

**Figure 5: Trend of Notified cases of new smear positive cases in Global & SAARC Regions**



Above diagram shows that proportion of new sputum smear positive cases occupied by SAARC region in Global burden starts increasing from 2005 and before that it was static around 27%.

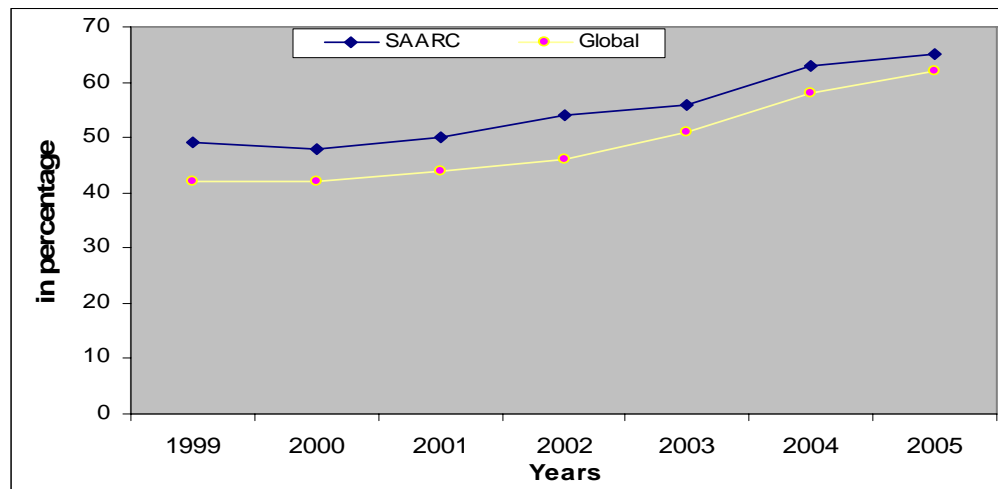
The case detection rate for new smear positive is 65.2% for 2006 for this region. Overall case detection rate in the region in 2006 for all type of TB cases is 62.5 %. (Table 6). In this region, new sputum smear positive case detection rates in 2006, was lowest in Pakistan (51%) and highest in Sri Lanka (86.2%). Bangladesh, Bhutan, Srilanka and Maldives met the 2005 target in this region. (Table 7)

**Table 7: Case Detection Rate of New SS+ Cases, SAARC Region, 1997-2006**

Country	1999	2000	2001	2002	2003	2004	2005	2006
Afghanistan							44	
Bangladesh	27	26	28	33	33	44	59	71
Bhutan	24	27	26	31	32	73	73	74
India	42	42	47	50	54	60	61	66
Maldives	106	86	88	92	92	92	94	82
Nepal	62	67	69	70	71	71	70	64
Pakistan	5	3	7	13	18	25	38	51
Sri- Lanka	79	87	86	93	83	77	86	86
Regional	49	48	50	54	54	63	65	65

Source: NTP, Country report except for Afghanistan, WHO-Global TB report 2007, Tuberculosis in SAARC region –An Update 2006

Figure 6: Trend of Case detection rate in SAARC and Global (1997-2005)



Comparison of the case detection rate of the region with global figure shows that the achievements of the region surpass the Global from 1999 onwards.

The increase in case detection rates definitely indicates better case finding & reporting but may also reflect a true increase in cases in some areas with a higher incidence of HIV. Since, it depends on estimated number of cases, it is essential to obtain better estimates of the disease burden. Most of the Member States have initiated or plan to undertake infection & prevalence surveys.

### 6.3. Treatment Outcomes

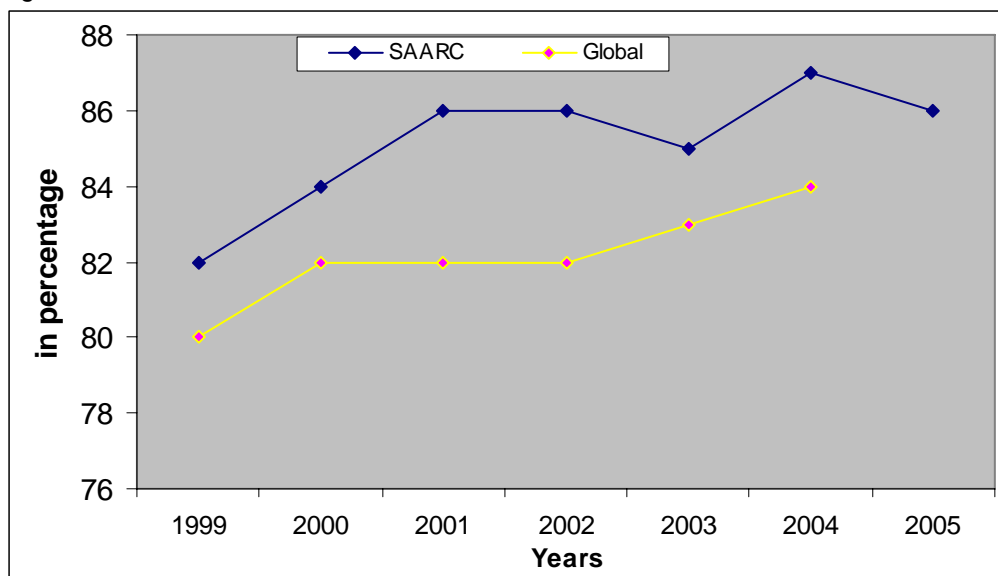
The treatment success rate for new smear positive patients registered under DOTS in 2005 cohort was 87.0%. All the Member States achieved Global target of treatment success.

Table 8: Treatment Success Rates, DOTS Area, SAARC Region (1998-2005 Cohort)

Countries	1998	1999	2000	2001	2002	2003	2004	2005
Afghanistan	-	-	-	-	-	-	89	NA
Bangladesh	80	81	83	84	84	85	90	91
Bhutan	90	85	90	93	86	89	83	87
India	84	82	84	85	87	86	86	86
Maldives	94	94	94	97	95	91	91	85
Nepal	84	84	87	86	87	88	88	88
Pakistan	66	70	77	78	79	82	84	87
Sri Lanka	76	84	77	80	81	81	85	86
<b>Regional</b>	<b>82</b>	<b>83</b>	<b>84</b>	<b>86</b>	<b>85</b>	<b>85</b>	<b>87</b>	<b>87</b>

Source: NTP, Country report except for Afghanistan, WHO-Global TB report 2007, Tuberculosis in SAARC region –An Update 2006

Figure 7: Trend of treatment success in SAARC and Global



Comparison of treatment success of the region with global figure shows that the achievements of the region are higher than global since 1999.

Figure 8: Progress in TB control in SAARC Region

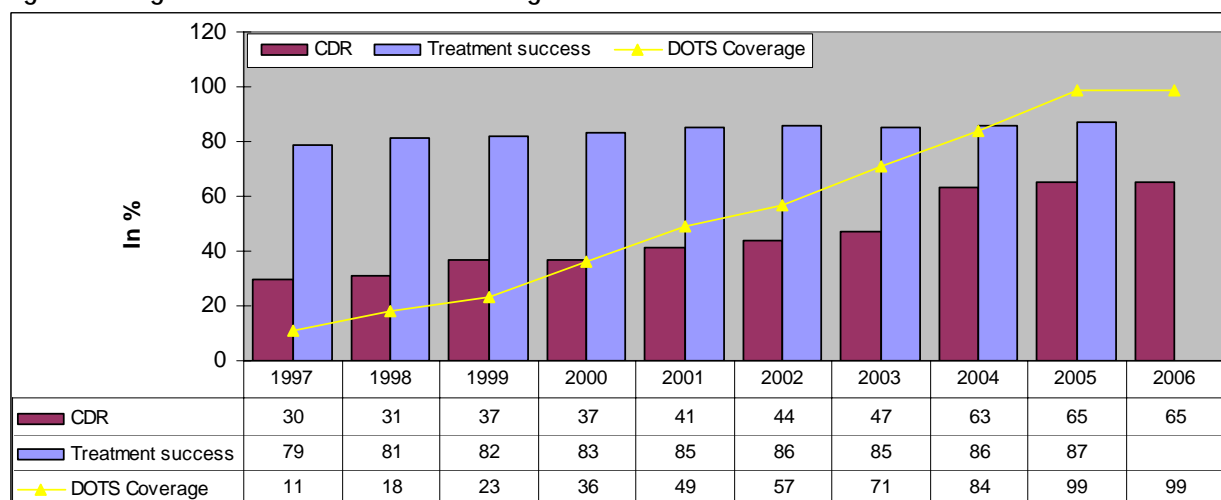


Fig 8 shows the overall progress in tuberculosis control in the region. It depicts that there is remarkable progress in DOTS coverage and reached to 99% in 2006. Regarding treatment success, the target is achieved since 2001. There is progressive improvement in relation to case detection rate.

**Table 9: Global vs SAARC Region on DOTS Coverage (2006), Case Detection Rate of New Sputum Smear Positive (2006) & Treatment Success (2005 cohort)**

TB Control Indicators	Global	SAARC
Estimated Population (2006)	6,461,751,000	1493038826(23%)
New SS +ve TB Cases notified (2006)	2,412,784	750249 (31%)
New all types of TB Cases notified (2006)	5,126,159	1781602(35%)
DOTS Coverage % (2006)	89	99.5
New SS +ve Case Detection Rate % (2006)	62	65.2
Treatment Success Rate 2005 cohort (%)	84	87

#### 6.4. MDR TB problem in SAARC region

##### Drug resistance problem in India

Drug resistant tuberculosis has frequently been encountered in India and its presence has been known virtually from the time anti-tuberculosis drugs were introduced for the treatment of TB. There have been a number of reports on drug resistance in India, but most studies used non-standardized methodologies and biased or small samples, usually from tertiary level care facilities. To date, there is some limited valid district level information about the extent of drug resistance, however there is no state representative surveillance data of drug resistance among TB patients available.

A major limiting factor in conducting resistance studies is the lack of state level quality assured culture and drug sensitivity testing (DST) laboratory facilities. From the available data, **drug resistance amongst new patients** in India, varies from area to area. However the data available, mainly from studies conducted by the TB Research Centre (TRC), Chennai and the National TB Institute (NTI), Bangalore, shows MDR-TB levels of less than 1% to 3% in new cases and of 12% in re-treatment cases.

A retrospective analysis of various randomized clinical trials conducted by the TRC with various rifampicin containing regimens in the initial intensive phase, and with and without rifampicin in the continuation phase, revealed an overall emergence of resistance to rifampicin in only 2% of patients, despite a high level (18%) of initial resistance to isoniazid, either alone or in combination with other anti-TB drugs.<sup>5</sup> With a rapid increase in coverage of the RNTCP and the high cure rate observed in most regions, a similar trend of low emergence of resistance is expected across the country.

### **Magnitude of MDR-TB in Bangladesh**

There are no national data on drug resistance in Bangladesh. However, in collaboration with the Shyamoli Chest Disease Clinic, the International Centre for Diarrheal Diseases and Research has conducted drug-sensitivity testing (DST) in a sample of 657 patients showing 3% and 15% MDR-TB among new and previously treated TB patients, respectively. These data are not representative since the Shyamoli Chest Disease Clinic is a referral centre for TB.

Damien Foundation has also conducted two drug-resistance studies in 1995 and 2001 comprising 645 and 1041 patients. These studies demonstrate that the overall MDR-TB prevalence has fallen from 2.5% to 0.7% (from 0.7% to 0.4% in new, and from 6.8% to 3.0% in re-treatment cases). Although the rates of MDR-TB in Bangladesh do not appear to be high, the absolute number of MDR-TB cases is high considering the high TB burden. MDR-TB prevalence among new cases of 1% translates into approximate 3000 new MDR-TB cases per year. A study conducted in 2005-2006 showed that of 96 Category 2 failures, 88% had MDR-TB, of these 13% were also resistant to Ofloxacin and/or Kanamycin.

### **Magnitude of MDR-TB in Sri-Lanka**

The estimated MDR-TB patients are 299 (2.3% of all TB cases). According to available data on MDR TB from the National Reference Laboratory, as all the specimens from the whole country is processed there, in years (2004-2007) the total No. of MDR patients detected by the central laboratory is 48. Out of this 48 patients the new cases – 12 & re-treatment – 36

### **Magnitude of MDR-TB in Bhutan**

According to the drug sensitivity testing pattern (2005-2007) under National Tuberculosis Control Program, Bhutan there are 18 MDR TB patients, among them 13 patients are under DOTS Plus treatment, which is provided at IDW National Reference Hospital, Thimphu and remaining 5 patients had completed the treatment.

### **Magnitude of MDR-TB in Nepal**

Nepal has carried out 3 drug resistant surveillance (Global Project Drug Resistance, WHO/IUATLD 1996/1999/2001). This surveillance reports showed that the prevalence of MDR-TB among New TB cases 1996/97 -1.2%, 1998/99 -3.6%, 2001/02 – 1.3%. It was estimated that there are 500 – 600 MDR TB patients in Nepal. DOTS Plus Pilot Project initiated from September 2005 in Nepal in 5 Pilot districts within 5 regions of Nepal. Till now 324 MDR TB patients are under DOTS Plus treatment.

### **Magnitude of MDR-TB in Maldives**

No case has emerged in the last 20 years till 2007. 20 years ago two patients who were diagnosed as MDR TB from abroad, and both patients had succumbed to extensive disease during treatment. At present 1 female patient diagnosed as MDR TB in 2007 based on culture sensitivity, resistant to both rifampicin and INH. One male patient with chronic TB, sputum positive at the end of category 2, culture and sensitivity

report pending. Drug susceptibility testing is not available in Maldives and C/S is done at Ranbaxy Lab, Bombay.

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8. Maldives-Country presentation in Second workshop to develop Regional Guidelines for Treatment of MDR-TB & third Meeting of Lab Directors from 9 Reference Laboratories in SAARC Region at Bhutan.
9. Bhutan-Country presentation in Second workshop to develop Regional Guidelines for Treatment of MDR-TB & third Meeting of Lab Directors from 9 Reference Laboratories in SAARC Region at Bhutan

## 7. Progress with TB Control in SAARC Member States

- Afghanistan
- Bangladesh
- Bhutan
- India
- Maldives
- Nepal
- Pakistan
- Sri Lanka



# Afghanistan

## 1. Status of Tuberculosis Control

The unfavorable political situation in the country has affected the overall development of the nation in the public health. The declining situation for the detection and control of Tuberculosis in Afghanistan has become a very serious matter. The WHO is also concerned about the possibility of further complication in Tuberculosis control programme as well as emergence of drug-resistant strains of the disease.

Tuberculosis is easily spread from person to person amongst those living in crowded, poorly ventilated conditions. However those who were previously infected, but never ill, are now at further risk. Dormant TB bacilli can spring back to life and cause serious illness when people are especially stressed – for example when there are concerns about adequate food, shelter and warm clothing. Therefore adequate provision of humanitarian relief supplies can help minimize this risk of TB re-infection.

It is estimated that more than 50 thousand new cases of tuberculosis are added every year in Afghanistan. Women are more vulnerable to TB disease. About 10,000 people die of the disease each year.

In the current situation new TB control drugs are not reaching those who may need them. But what could be worse, those who were following a treatment course may not be able to finish it, laying the foundation for drug-resistance.

As with other areas of the health crisis, lack of trained personnel is a constant concern. A priority to train health workers for detection and control of tuberculosis is vital. Provision of training and supplies to staff, working in close collaboration with NGOs and local health authorities for TB control should continue and TB control programme should be integrated into national public health infrastructure.

DOTS (Directly Observed Treatment Short-course) strategy should be expanded with applied adequately trained supervisors, health workers and medicines are in place. Due to non availability of NTP reports, the information about the NTP Afghanistan is based on WHO Global Report, 2007.

**Table 10: Key Indicators of TB in Afghanistan**

Population, estimated 2005	29863000
DOTS Coverage - 2005	81%
Case detection rate – all types - 2005	42%
Case detection rate- New Sputum Smear Positive - 2005	44%
Cure rate - 2004	79%
Treatment Completion Rate - 2004	10%
Treatment Success Rate - 2004	89%

Source: WHO Global TB Report 2007

In the year 2005, 21844 all types of cases of TB notified (74/100000), of which 9949 were smear positive (33/100000) and capable of spreading the disease to others.

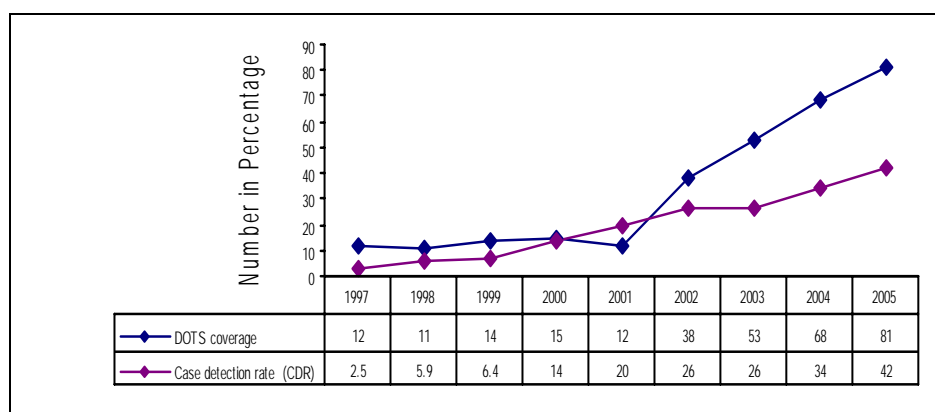
## 2. DOTS Progress

Treatment success rate under DOTS has already been achieved. The DOTS Treatment Success in 2004 cohort is 89%. Case detection rate was 29% and 28% respectively in 2002 and in 2003, 36% in 2004 and 44% in 2005 suggesting that it is increasing however, it is still below WHO target of 70%. Expansion of DOTS services to cover more than two thirds of the population. Include DOTS services in the Basic Package of Health Services (BPHSs) in 803 health-care facilities (81% to total). Improved number and skills of NTP central and provincial staff and developed 5-year NTP plan (2006 – 2010) in line with the Stop TB Strategy. Expansion of partnership with BPHS partners for TB care (including technical assistance, training, drug supply) under the coordination of the NTP and MoH. Despite the emergency situation NTP successfully treated more than 85% of registered new smear positive TB cases in the past 3 cohorts (2002-2004). Laboratory network has been expanded to over 400 microscopy laboratories. NTP has continued to make good progress in several areas. (Table 11, Figure 9)

Table 11: DOTS Progress in Afghanistan

	1997	1998	1999	2000	2001	2002	2003	2004	2005
DOTS coverage (%)	12	11	14	15	12	38	53	68	81
DOTS notification rate (new & relapse/100 000)	5.9	14	14	30	41	53	51	64	73
DOTS notification rate (new SS+ /100 000)	2.8	8.2	7.3	12	19	25	24	29	33
DOTS case detection rate (new SS+ %)	2.7	8.2	7.5	13	21	29	28	36	44
DOTS treatment success %	45	33	87	86	84	87	86	89	-

Figure 9: DOTS Coverage and Case Detection Rates of New Sputum Smear Positive in Afghanistan



## 3. Challenges

- Filling large funding gaps in the 2006 and 2007 NTP budgets
- Rapidly implementing the GFATM round 4 project
- Increasing government funding, TB is considered as one of the top health priorities, nonetheless government funding makes up only 0.3% of the NTP budget for 2007, leaving TB control heavily dependent on international funding.

- Scaling up the collaboration with BPHS partners by developing collaborative mechanisms and providing TB specific technical assistance, anti TB drugs and laboratory reagents
- Strengthening the NTP central unit, and defining a clear policy for staffing and training.

#### **4. Planned activities:**

- Continue DOTS expansion within BPHS through the training of health workers, expansion of TB laboratory network and by ensuring a regular supply of anti TB drugs.
- Improve quality of TB services through continuous monitoring and evaluation of TB control activities, supervision, training/retraining and community involvement.
- Strengthening and monitor TB contact investigation activities within TB control services
- Ensure appropriate and efficient coordination with and among the various partners through the interagency Coordination Committee
- Pilot EQA for smear microscopy in Balkh and Heart in collaboration with JICA and WHO.

# Bangladesh

## 1. Status of Tuberculosis Control

Tuberculosis is a major public health problem in Bangladesh. According to the present estimation of NTP, approximately one new TB case develops in every 2 minutes and one person dies in every 10 minutes.

- By June 1998, NTP services were made available in rural areas of the country.
- From July 1998, NTP was integrated into the Communicable Disease Control (CDC) area of Essential Services Packages (ESP) under Health and Population Sector Programme (HPSP).

The revised NTP has achieved 91.5 Treatment Success Rate in 2006 and 71% case detection (New Sp.+ve) rate in 2006. The NTP, together with its old and new partners, intends to intensify the DOTS programme in order to achieve its targets of case detection and maintain cure rate among the sputum smear pulmonary TB cases.

In the year 2006, 145164 all types of cases of TB were notified (103/100000), of which 101988 were smear positive (72/100000) and capable of spreading the disease to others.

**Table 12: Key Indicators of TB in Bangladesh**

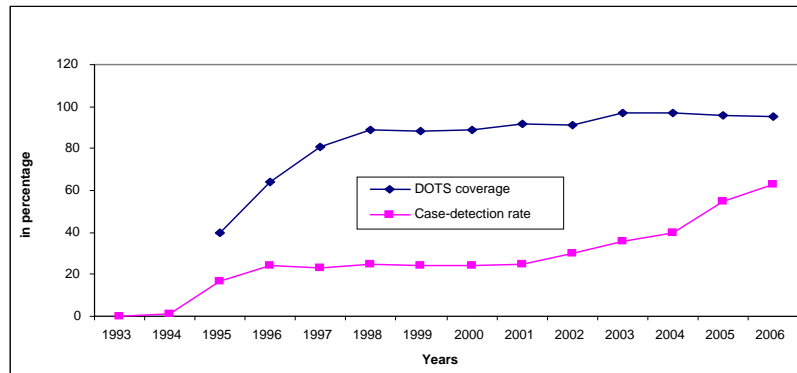
Population, estimated 2006	140701449
DOTS Coverage -2006	99%
Case detection rate – all type - 2006	45%
Case detection rate- New Sputum Smear Positive -2006	71%
Cure rate -2005	90.6%
Treatment Completion Rate - 2005	0.9%
Treatment Success Rate - 2005	91.5%

Source: NTP 2007, Bangladesh

## 2. DOTS Progress

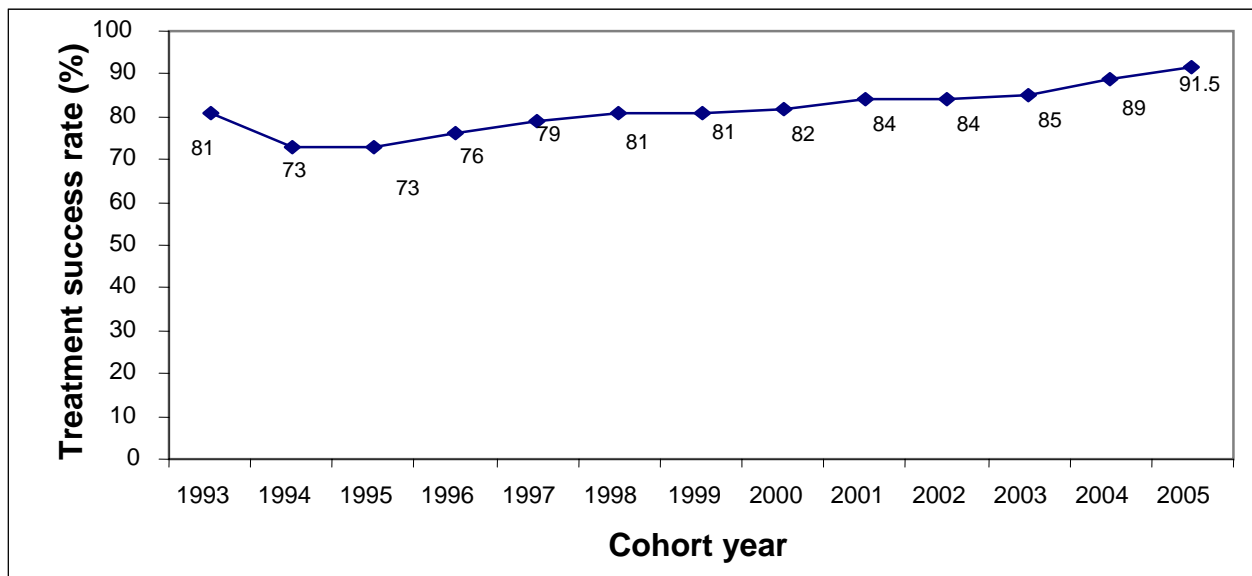
Treatment success rate under DOTS has attained WHO target of 85% in 2003 cohort. Case detection rate is 71% in 2006 suggesting that it is increasing more rapidly; it has already achieved WHO target of 70%. Involving the private health sector in the implementation of DOTS is considered vital, as it is a significant provider of services to those seeking care for TB. The Government has continued to accord TB control services a very high priority and the national TB Program (NTP) has continued to make good progress in several areas.

Figure 10: Progress in DOTS implementation and case detection under DOTS



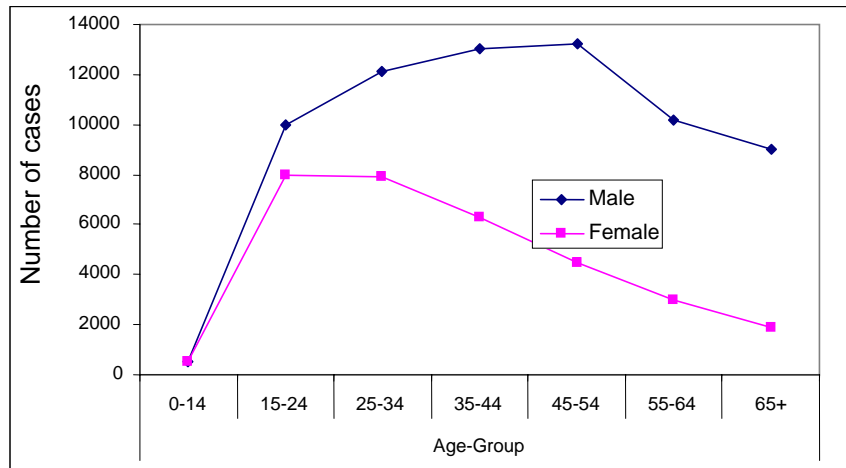
Bangladesh adopted WHO recommended DOTS strategy and implemented as pilot in Nov. 1993 and by 2006 99% of the country population is considered to live in areas where DOTS services are available. After the introduction of the DOTS strategy in 1993, the case detection rate for new smear positive cases increased gradually and reached 28% in 1998. From 2001 onwards, case detection accelerated to reach 46% in 2004 and further increased to 61% in 2005 and 71% in 2006, thereby reaching the global target (Figure 10).

Figure 11: Trends in treatment success rates, 1993-2005 cohorts



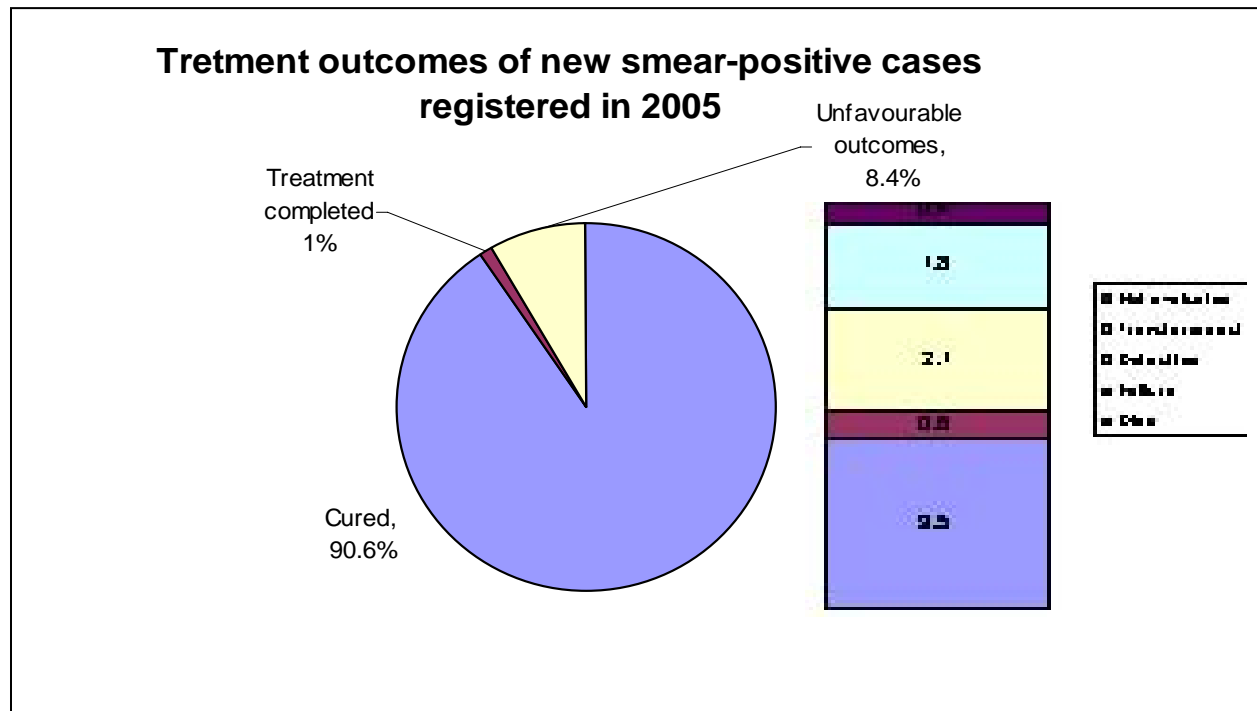
Treatment success rates under DOTS have been consistently high from the beginning and crossed the global target of 85% since 2003. This treatment success rate has improved further to reach 89% for the cases registered in 2004. The NTP has successfully treated 77,604 of the 84,805 (91.5%) new smear positive cases registered in 2005 (Figure: 11).

Figure 12: Notification of new smear-positive pulmonary TB by age and sex, 2006



Out of the 101988 new smear positive cases reported, about 67% were male. The male-female ratio was 2.1:1. The number of male cases was higher in all age groups except in children (less than 15 years old), where girls outweighed boys. Almost three quarters of the reported cases were between 15 and 54 years old. They constituted also the economically most active age groups. As shown in Figure 12, the notification rates increased with age for both sexes and appear to be lower again in people above 65 years. The default rate was reduced to only 2% while 3.5% of the patients have died during treatment. Fig 13

Figure 13: Treatment outcome of new smear positive cases registered in 2005



## **5. Challenges to reaching the case detection target:**

Major challenges include increasing and maintaining high levels of commitment at policy levels, improving the quality of the diagnostic services, intensifying partnership with NGO's, the private sector, academic institutes and workplaces, strengthening, monitoring and evaluation and implementation of HRD TB control.

## **6. Future direction for TB control in Bangladesh:**

Bangladesh adopted the Global Stop TB Strategy that includes:

- Sustaining, Strengthening and enhancing DOTS
- Addressing TB/HIV, MDR TB and other special challenges
- Contributing to health system strengthening
- Engaging all care providers, i.e. Public-Private and Public-Public Mix approach
- Empowering patients and communities
- Enabling and promoting research

## **References:**

1. Tuberculosis control Programme in Bangladesh, Annual report 2007
2. Tuberculosis in Bangladesh, Annual report 2005
3. Tuberculosis in Bangladesh, Quarterly report Second & Third Quarter 2006, National TB Control Programme

# Bhutan

## 1. Status of Tuberculosis Control

The Government of Bhutan continues to put great emphasis on public health. TB remains one of the major public health problems of Bhutan. The country initiated TB control activities long before the introduction of DOTS strategy. The Royal Government of Bhutan accords high priority to the National Tuberculosis Control Program (NTP). Since its inception in 1976 the program has been fully integrated into the primary health care system. Short course chemotherapy (SCC) initially piloted in 1988 and was introduced nationwide in 1994. The Directly Observed Treatment Short Course (DOTS) was introduced nationwide in 1997. The recording, reporting and management aspect of the program is in line with the WHO global strategy for TB control.

In the year 2006, 934 all types of cases of TB were notified (139/100000), of which 312 were smear positive (46/100000) and capable of spreading the disease to others.

**Table 13: Key Indicators of TB in Bhutan**

Population, estimated 2006	672425
DOTS Coverage - 2006	100%
Case detection rate – all type - 2006	-
Case detection rate- New Sputum Smear Positive - 2006	74.1%
Cure rate - 2005	80.4%
Treatment Completion Rate - 2005	7.0%
Treatment Success Rate - 2005	87.4%

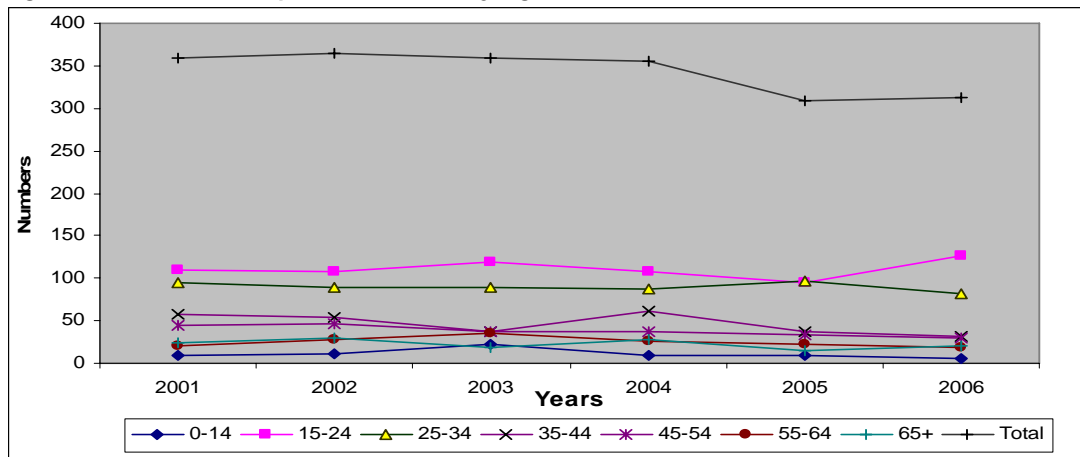
Source: NTP Report 2007

## 2. DOTS Progress

In 1997 entire country was covered with DOTS services. Because of its hilly terrain, Bhutan has utilized the strategy of hospitalization during the intensive phase of treatment throughout the country. Most of the smear positive patients are admitted in the district hospitals for initial two months (intensive phase); anti TB drugs are being provided at the Basic Health Units in the respective district during the continuation phase. Diagnostic facilities, except culture, have been established at all district hospitals and planned to extend below district level health facilities.

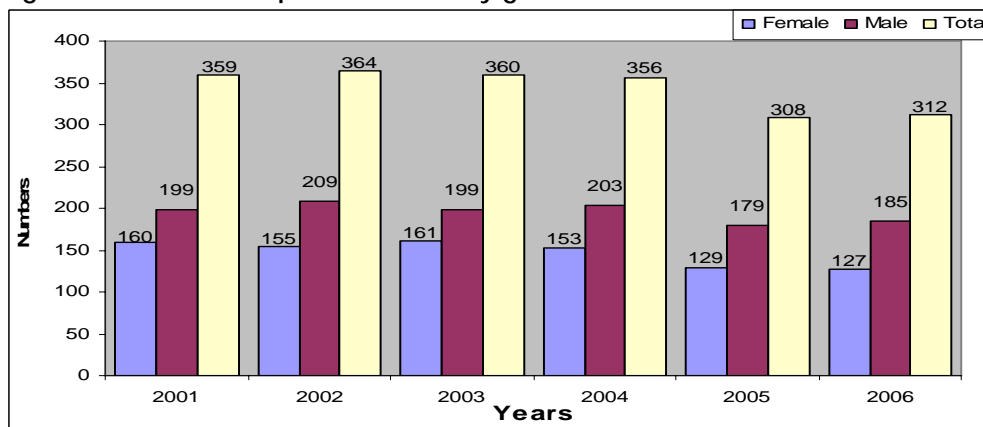


Figure 14: New smear positive cases by age breakdown, 2001-06



Above figure shows that in each year maximum numbers of new reported cases are within the age group of 15 to 24 years followed by 25 to 34 years.

Figure 15: New smear positive cases by gender



Above figure shows that reported new smear positive cases have started decreasing since 2003. From 2004 onwards, among new smear positives cases, proportion of female is decreasing while male's proportion is increasing.

Figure 16. Case finding notified, 2001-2006

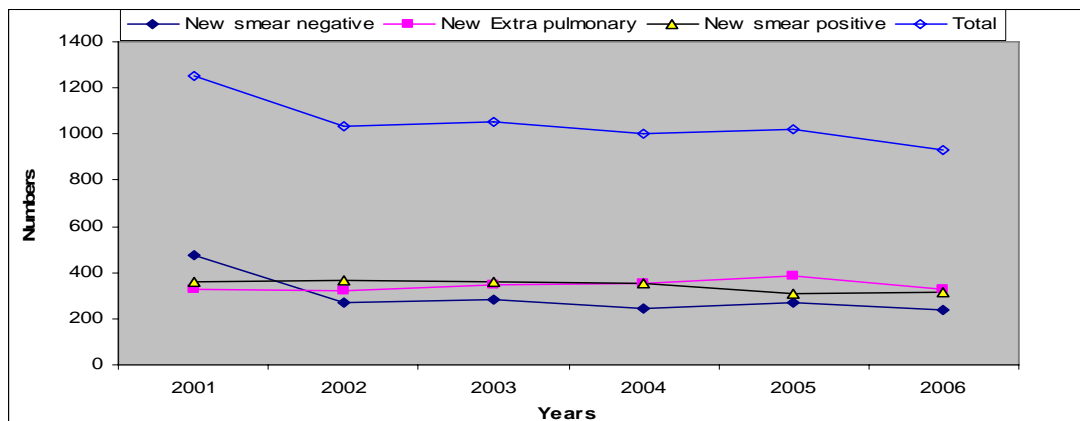
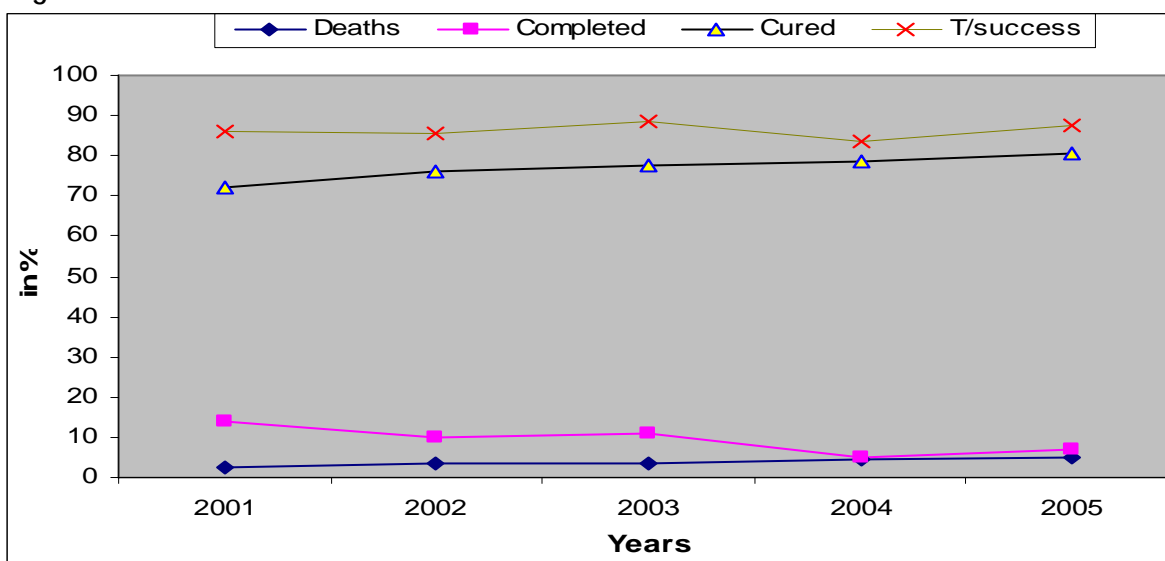


Fig 16 shows that there is gradual decrease in total case reporting, among this new extra pulmonary cases are found to be static, while new smear positive and negative case show a decreasing trend.

Cure rates have been relatively low (78% for 2004 cohort) possibly because follow up smear examinations were not uniformly undertaken and reporting from the districts might be incomplete but treatment success rate of 2005 cohort is 87.4%.

**Figure 17: Trend of Treatment outcomes**



Above figure shows that there is improvement in treatment success in 2005 and gradual improvement in cure rate since 2002.

## 5. Challenges

- Managing TB in migrant workers
- Increasing number and skills of staff
- Strengthening laboratory network and improving EQA
- Strengthening monitoring and supervision
- Decentralization of DOTS to grass root level

## 6. Planned Activities

- Optimize DOTS delivery in remote areas
- Strengthen the laboratory network and establish quality control mechanisms for microscopy services throughout the country
- Reduce treatment completion rate and improve treatment success rate
- Enhance management and supervisory capacity of the NTP.
- Strengthen coordination with HIV/AIDS Program.

- Follow through bilateral and multilateral agreements to address the issue of managing TB in migrant workers.

**References;**

1. NTP Country report of 2006
2. Annual Health Bulletin 2006

# India

## 1. Status of Tuberculosis Control

Tuberculosis threatens the health of millions in the country. With 1.8 million cases occurring annually, India accounts for a fifth of the world's new TB cases and 2/3rd of the cases in South-East Asia. This makes India the highest TB burden country in the world. It has been estimated for the year 2000, that there were about 3.8 million bacteriologic ally positive TB cases in the country.

TB remains one of the most serious diseases that affect the health as well as the economy of the country. The bacillus *Mycobacterium tuberculosis* presents itself in various forms – Latent TB infection, Active TB and Multi-drug resistant TB (MDR-TB) disease. The spread of HIV during the last two decades and the emergence of MDR-TB pose additional challenges to effective TB control.

Estimates of TB prevalence, incidence and mortality in the country are based on an analytical and consultative process that takes into account all information available on case notifications, prevalence of infection and disease, tuberculin surveys, duration of illness, proportion of smear positive cases, number of cases treated and remaining untreated, HIV prevalence, mortality and demography.

The first estimates of tuberculosis disease prevalence in India became available in the 1950s, and the figure of 4/1000 for the nation as a whole was accepted then. Today, two of every five Indians are infected with the TB bacillus. There is a strong chance that of them, at least 10% will develop TB disease during their lifetime. Of the 1.8 million new TB cases occurring annually, around 0.8 million have sputum positive pulmonary TB. One sputum positive patient can infect 10–15 persons in a year if left untreated. Poorly treated patients can develop drug-resistant and potentially incurable forms of TB.

In the year 2006, 1397498 all types of TB cases were notified of which 553660 were smear positive and capable of spreading the disease to others.

In India, over 70% of the cases occur in the economically productive age group (15–54 years) and TB is one of the leading infectious diseases causing death. As per WHO estimates in 2004, 370,000 persons in India died of tuberculosis (mortality rate 30 per 100,000 persons), which was estimated at over 500,000 annually prior to 2000. TB causes huge economic loss with about 17 crore workdays lost due to the disease. The annual economic cost of tuberculosis to the Indian economy is at least US\$ 3 billion (more than Rs 13,000 crore).

### Social Burden – TB and Poverty

The usual victims of TB are migrant labourers, slum dwellers, residents of backward areas and tribal pockets. Known as the disease of the poor, TB often appears where malnutrition, shanty housing and over crowding are common. It can lock the entire community into a circle of disease and poverty. Women are doubly disadvantaged. They largely ignore medical help in the initial stages, not wanting to neglect household responsibilities. A TB-affected mother can pose a threat to the entire household as she is close to her children and has to perform household duties. In many cases, children whose mothers died of TB were found to be infected. TB deaths among women have major implications for child survival, economic productivity and family welfare. Women try to suppress TB symptoms fearing stigma and rejection. More than 100,000 women with TB are abandoned by their families every year, making it a major deterrent to

women's empowerment. More than 300,000 children are forced to leave school every year, because their parents have TB. The social stigma of the disease adds to the burden for both men and women. Studies indicate that while men have to deal with the stigma at their workplaces and in the community, women are ostracized in the household and neighborhood.

**Table 14: Key Indicators of TB in India**

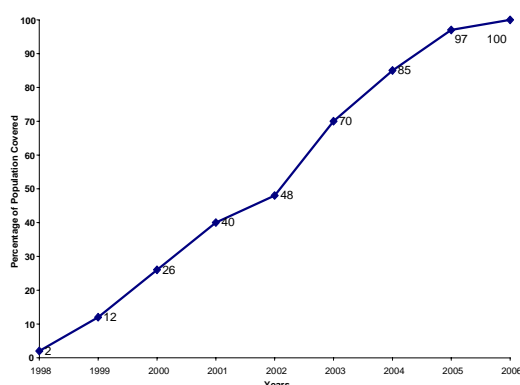
<b>Population, estimated 2006</b>	1114200000
<b>DOTS Coverage - 2006</b>	100%
Case detection rate – all type - 2006	75.5%
Case detection rate- New Sputum Smear Positive - 2006	66.0%
Cure rate - 2005	83.0%
Treatment Completion Rate - 2005	3.0%
Treatment Success Rate - 2005	86.0%

Source: Source: RNTCP 2007

## 2. DOTS Progress

Through the Revised National Tuberculosis Control Program (RNTCP) was introduced by the Government of India in 1997, DOTS expansion increased from 2% of the population in 1997 up to 91% in 2005 and up till March 2006 this coverage became 100% making *India the fastest DOTS expansion-country in the World*.

**Figure 18: Rapid Scale-up of RNTCP Coverage**



Consistently high treatment success rate under DOTS has been maintained and for 2005 cohort it is 86%. The case detection rate of new Sputum Smear Positive is consistently improving along with the improvement in treatment success and DOTS coverage. (Fig 19 & 20)

Figure 19: Trend of CDR & DOTS coverage

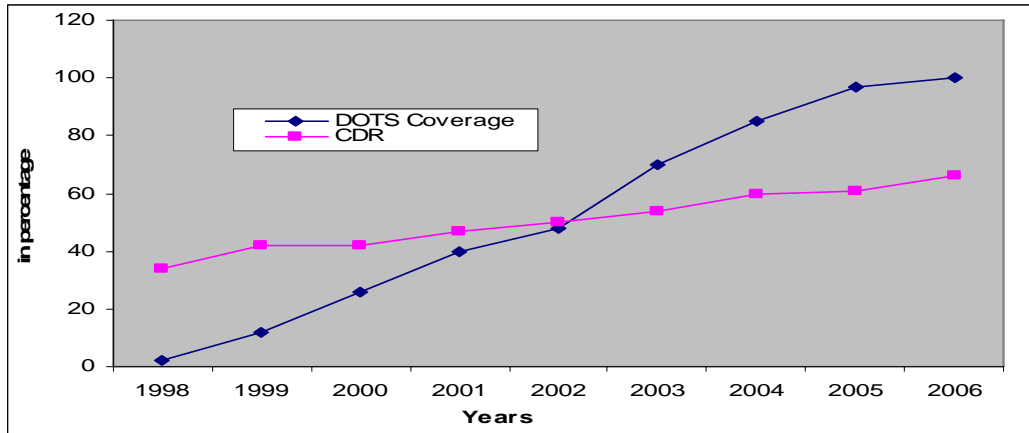


Figure 20: Trend of CDR & treatment success

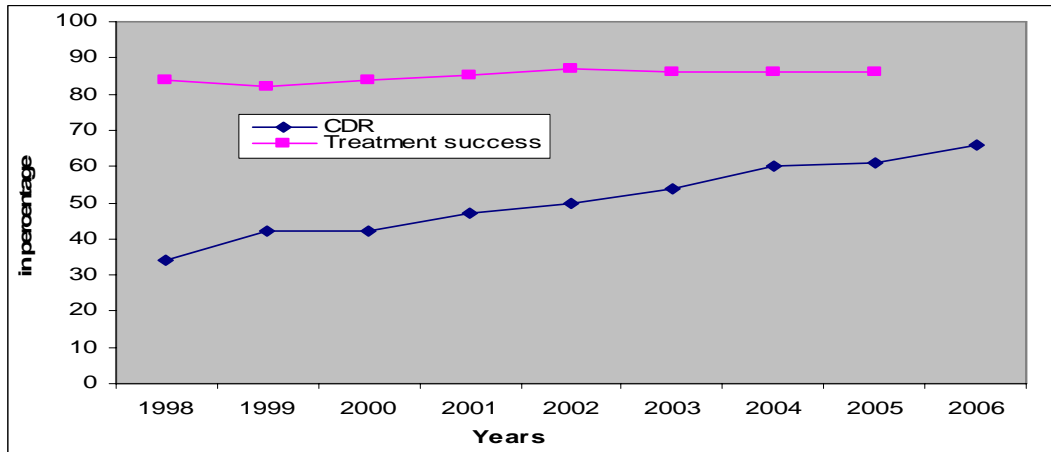


Figure 21: TB affects mostly young adults

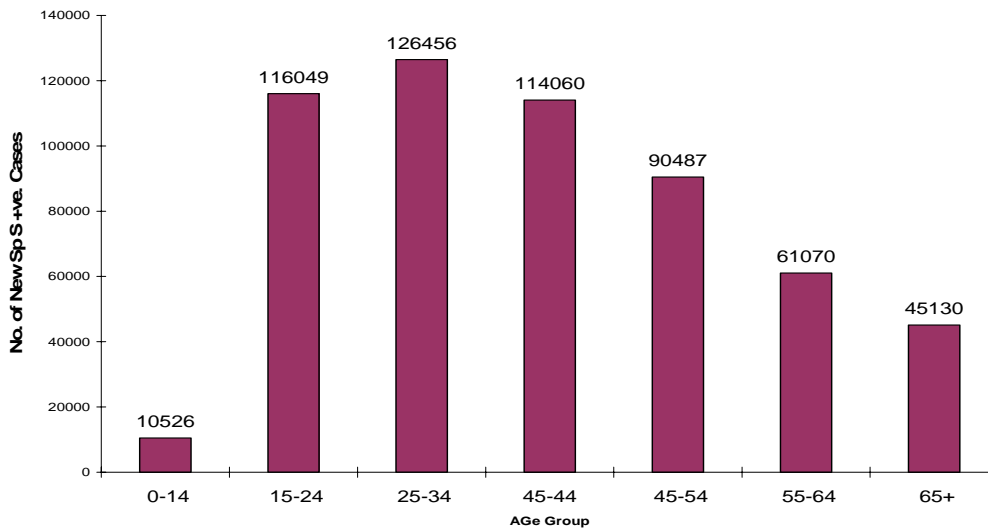


Fig 21 shows that the most affected group lies with in the age group of 25-34 years.

## 5. Challenges

- Sustaining and improving high-quality DOTS services in a population of over one billion people
- Improving access to DOTS services in remote areas
- Ensuring adequate numbers of trained microbiologists and laboratory technicians in all states and increasing capacity of NRLs & Intermediate reference laboratories for monitoring, evaluation, DRS and research
- Furnishing intermediate reference laboratories for culture and DST
- Improving coordination between NACP and NTP for reporting and treatment delivery
- Decentralizing VCT services of the NACP so that they are close to DOTS facilities
- Increasing availability of quality-assured culture and DST for diagnosis and follow up of MDR TB patients
- Improving awareness of TB and access (physical, social and economic) to TB services in poor communities.
- Improving access and maintaining quality of services during changes caused by the introduction of the National Rural Health Mission and integration of state/district TB societies into single state/district health societies
- Ensuring adequate HR capacity and availability at all levels of the health system.
- Ensuring high-quality TB management in context of weak regulation of private health-care provision and drug sales in the private sector
- Involving individual formal and informal care providers in DOTS implementation and ensuring adequate training and supervision
- Building and sustaining NTP capacity to coordinate and manage the involvement of wide range of public and private providers.
- Overcoming stigma of TB and discrimination against TB patients
- Promoting awareness of TB and of DOTS in traditional healers, particularly in remote areas

## 6. Planned activities

- Strengthen the capacity of intermediate reference laboratories to perform culture and DST
- Continue to train NACP and NTP staff on HIV and TB
- NACP to expand network of VCT and ART centres to reduce the distance between NACP and NTP services
- Establish MDR TB treatment centres
- Increase use of community volunteers to provide DOT to marginalized population such as the homeless and the very poor, and use enablers to improve diagnosis and follow-up
- Continue to train all level health workers, both in the public and private sectors, and community workers and volunteers

- Scale up mechanisms for referral for treatment and transfer from large health-care institutions
- Increase involvement of professional organizations such as Indian Medical Association
- Mobilize community based self help groups and NGOs to assess needs, promote early diagnosis and provide patient support
- Use community youth groups for transportation of sputum samples in inaccessible areas
- Continue use of media and develop needs-based local strategies to reach all communities

**References:**

1. RNTCP status report, 2007
2. Training Module for Medical officers on TB/HIV, August 2005



# Maldives

## 1. Status of Tuberculosis Control

Tuberculosis prevalence has been reduced in the past decade. In 1995 the case fatality rate from tuberculosis stood at 5 percent. The incidence of TB has also been reduced 0.2 per 1000 population. TB patients are registered at the Chest Clinic and Directly Observed Treatment Short course (DOTS) is initiated for 100per cent of detected cases. Furthermore, there are no cases of TB reported in the under five population. This may be a real decline in childhood TB due to high BCG vaccination coverage.

The performance of communicable disease control has been commendable in the Maldives. High immunization coverage has ensured low prevalence and elimination status of many diseases. However, a major challenge would be to sustain these achievements over time. Since incidence of disease such as TB and other secondary infections are increased with high prevalence of HIV/AIDS, efforts on HIV/AIDS control as well as other communicable disease control activities has to be sustained further.

The overcrowding in Malé remains a major threat to spread of diseases such as TB. Furthermore, many of these diseases are still stigmatized and there is hesitance to seek early treatment. Thus open cases remain untreated in the community posing a major risk to further spread of these diseases.

In the year 2006, 100 TB cases, all types notified (33/100000), of which 53 were smear positive (18/100000) and capable of spreading the disease to others

**Table 15: Key Indicators of TB in Maldives**

<b>Population, estimated 2006</b>	298968
<b>DOTS Coverage - 2006</b>	100%
Case detection rate – all type -2006	64.5%
Case detection rate- New Sputum Smear Positive -2006	82.5%
Cure rate -2005	84.8%
Treatment Completion Rate - 2005	0.9%
Treatment Success Rate - 2005	85.7%

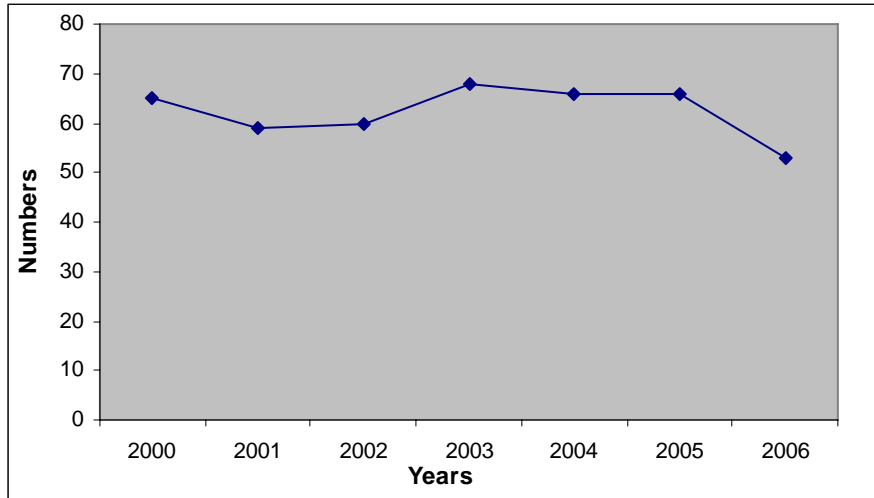
**Table 16: TB Notification for 2006, Maldives**

No. of TB cases registered	100
New pulmonary smear positive	53
Relapse pulmonary smear positive	4
New pulmonary smear negative	16
New pulmonary smear unknown	0
New extra pulmonary	26
Extra pulmonary smear negative, relapse	1
Treatment after failure (pulmonary)	0
Treatment after default (pulmonary)	0

## 2. DOTS Progress

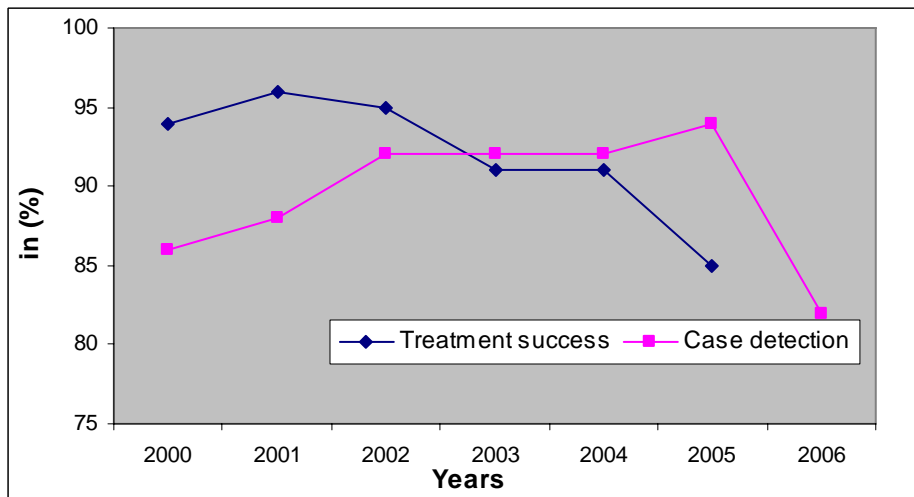
The country adopted the DOTS strategy in 1994 and achieved 100% population coverage in 1996. Actually from the beginning of TB control Program Maldives was providing anti TB treatment under direct supervision. The private sector has been well integrated with the TB Control program. Facilities to perform mycobacterial cultures are made available at Indira Gandhi Memorial Hospital in 1997 and microscopy centres have been established at all Regional hospitals. Maldives was the first country in the Region to reach global targets.

Fig 22: Trend of New Smear positive cases registered



Above figure shows number of new smear positives cases notified increased till 2003 and remained around that level till 2005, and started decreasing and reached 53 in 2006.

Fig 23 Trend of Case detection and Treatment success rate



Treatment success rate has been sustained at over 85%. The case detection rate of new smear positive cases was consistently improving till 2005 and reached 94% in 2005. However, it decreased to 82.5% in 2006. Till 2003, no case of drug resistance has been reported. One MDR TB case was reported in 2007.

**Table 17: Treatment outcomes of new sputum smear positive (%)**

<b>Treatment outcomes</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Defaulted	0.0	0.0	0.0	1.5	0.0	1.5
Treatment failure	0.0	0.0	1.7	0.0	0.0	0.0
Died	4.6	1.7	3.3	2.9	4.5	4.5
Transfer out	1.5	1.7	0	4.4	1.5	9.1

Table 20 shows that in comparing the treatment outcomes except the cured part, proportion of died and transferred out is more than failure and defaulter. Treatment failure is nil from 2003.

So far there is only one HIV/TB positive patients found in the country, so the aim is to make the community aware and improve knowledge about co-infections and prevention of diseases. One of the aims is to ensure good cooperation between the Government and Private sectors, agencies that provide TB treatment

## **5. Challenges**

1. In Maldives, the mortality and morbidity from TB have decreased considerably. The main thrust of TB control programme has been creation of awareness, training of personnel and sustainability of DOTS
2. Improve both active and passive case detection and management of TB cases at all levels of Health care providers
3. Lack of adequately trained personnel and diagnostic facilities at different levels of the health care delivery system are limiting factors in active case finding and management. Social stigma attached to TB still lingers in public.

### **References:**

1. NTP Country report, 2006
2. Maldives, country presentation in Third SAARC regional Workshop on TB/HIV Co-infection, September, 2007
3. Tuberculosis in SAARC region an Update 2006, SAARC TB and HIV/AIDS center

# Nepal

## 1. Status of Tuberculosis Control

Tuberculosis (TB) remains one of the major public health problems in Nepal. About 45% population is infected with TB, of which 60% are adult. Every year, 40,000 people develop active TB, of whom 20,000 have infectious pulmonary TB. Although introduction of DOTS has already reduced the numbers of deaths, however 5,000 to 7,000 people still continue to die each year. Expansion of DOTS has proved its efficacy in Nepal. The global target of 85% treatment success has already been achieved.

DOTS has been successfully implemented throughout the country since April 2001. The coordination with private sector, local bodies, NGOs, INGOs, social workers, educational sectors and other sectors of the society has been strengthened in order to expand DOTS and sustain the present achievements. The Treatment Success Rate has now reached 88%.

In the year 2006, 33207 all types of TB cases notified (129/100000), of which 14028 were smear positive (55/100000) and capable of spreading the disease to others.

**Table 18: Key Indicators of TB in Nepal**

<b>Population, estimated 2006</b>	25665984
DOTS Coverage - 2006	100%
Case detection rate – all type -2006	69.1%
Case detection rate- New Sputum Smear Positive -2006	64.2%
Cure rate -2005	86.8%
Treatment Completion Rate - 2005	1.2%
Treatment Success Rate - 2005	88.0%

Source: NTP Report – 2005/6

## 2. DOTS Progress

Following a review of the national tuberculosis program in 1994, Nepal adopted DOTS strategy in 1995. DOTS demonstration sites were established in April 1996. Impressive achievements have been made since then. The NTP has rapidly expanded the DOTS coverage from 1.7% in 1996 to 100% by July 2003. In fact, by July 2001, the DOTS strategy has been expanded to all the districts of Nepal. By mid July 2006 the number of DOTS centres reached 560 treatment centres with 2,795 sub centres, established and integrated with general health services throughout the country. Now almost all diagnosed TB patients are getting treatment under DOTS strategy with more than 85% treatment success rate (now 88%).

Further expansion of the program covering the more inaccessible mountainous areas poses a challenge. Different types of approaches have been adopted in those areas. DOT by community volunteers, family members and I/NGOs has been found effective in some hill and mountain districts. A strong community base for DOTS has been achieved through the establishment of district and village DOTS committees that have been set up involving people outside the health sector. The NTP has coordinated with private sector,

local government bodies, NGOs, social workers and other sectors of society to expand DOTS and sustain the present appreciable results achieved by the program.

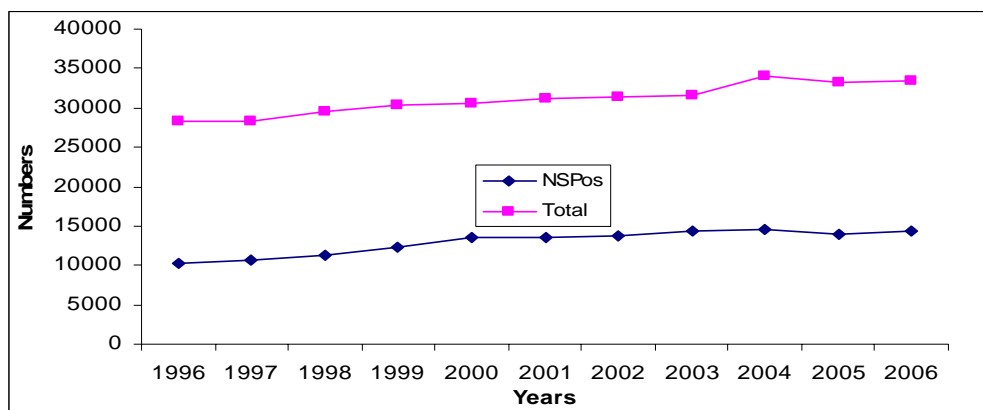
**Table 19: Progress in DOTS expansion**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
No. of DOTS Treatment Centres	4	29	41	122	202	227	273	324	384	462	560
No. of Treatment Sub-centres	-	-	-	-	-	784	909	1407	1872	2428	2795

Source: NTP Report 2005/6

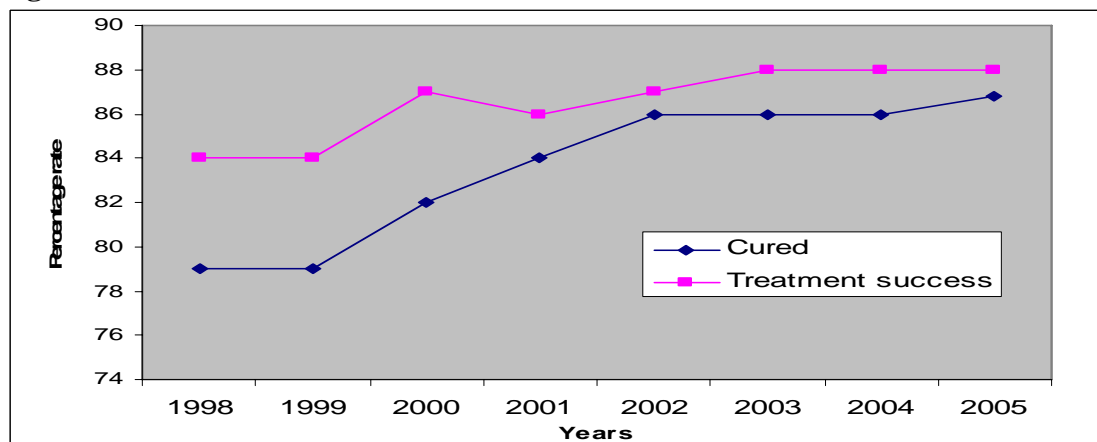
According to country Annual Report 2005/2006 (NTP, Nepal), the country has expanded the DOTS strategy to all the districts by July 2001 and now is in the process of expansion of DOTS in each and every health institution, which will be completed by 2007. In 2006, NTP was providing DOTS based services through 560 DOTS treatment centers and 2795 treatment sub centers.

**Figure 24: Trend of New Sputum Positive and Total Cases**



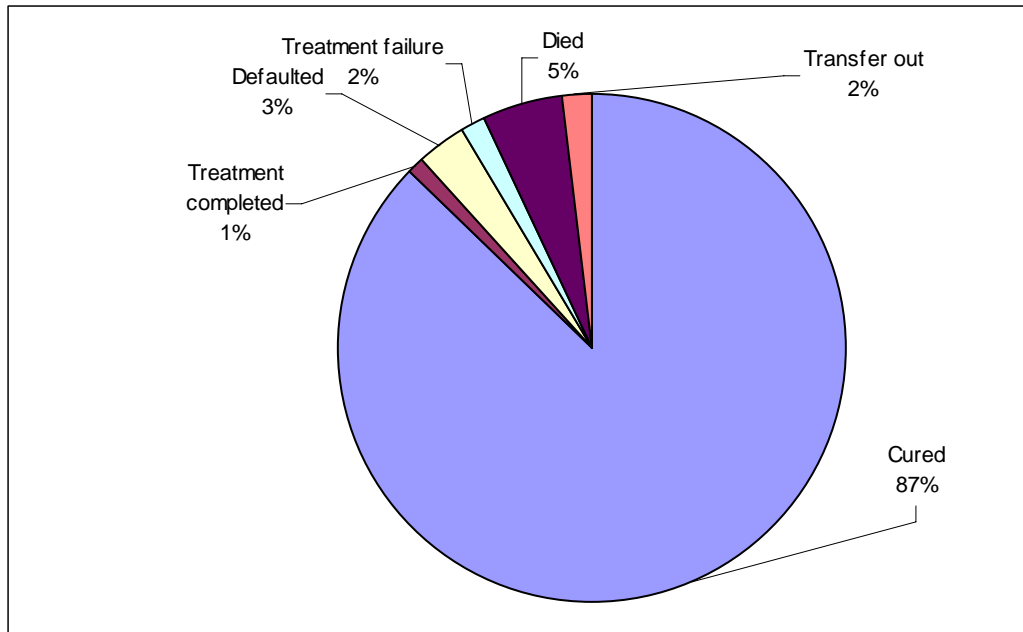
Above figure shows that there is gradual increase in reporting number of total as well as new smear positive tuberculosis cases.

**Fig 25. Trend of cured and treatment success rate**



Above figure shows that there is remarkable improvement in Cure rate and Treatment success rate since 2000. Treatment success rate reached 88% in 2005.

Figure 26: Treatment outcomes of new smear positive cases registered in 2005



For 2005 treatment cohort, in relation to treatment outcomes of new smear positive cases, cure rate is 87% and treatment failure is only 2%, defaulter rate is 3%.

Figure 27: Trend of unfavorable treatment outcome

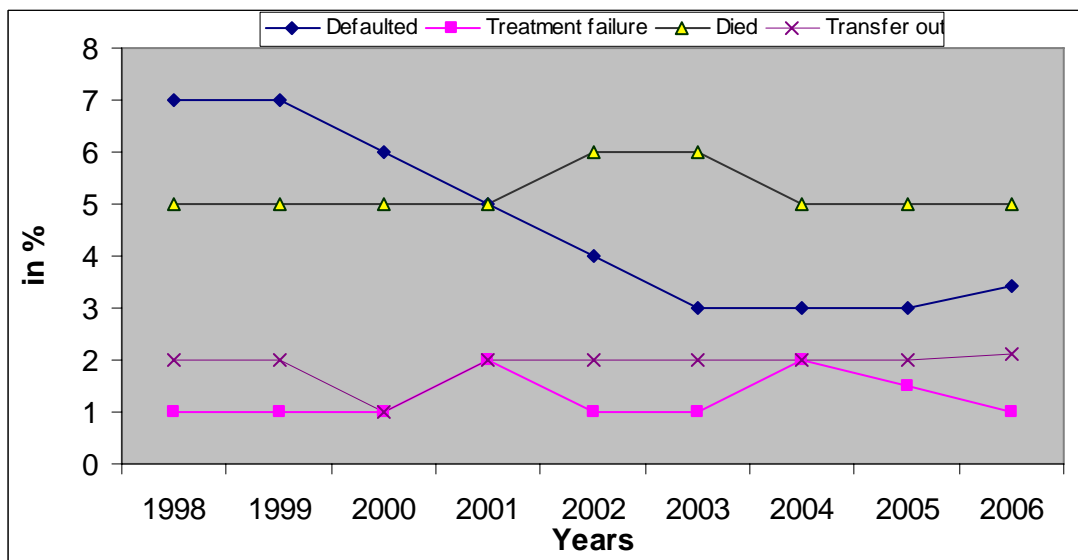
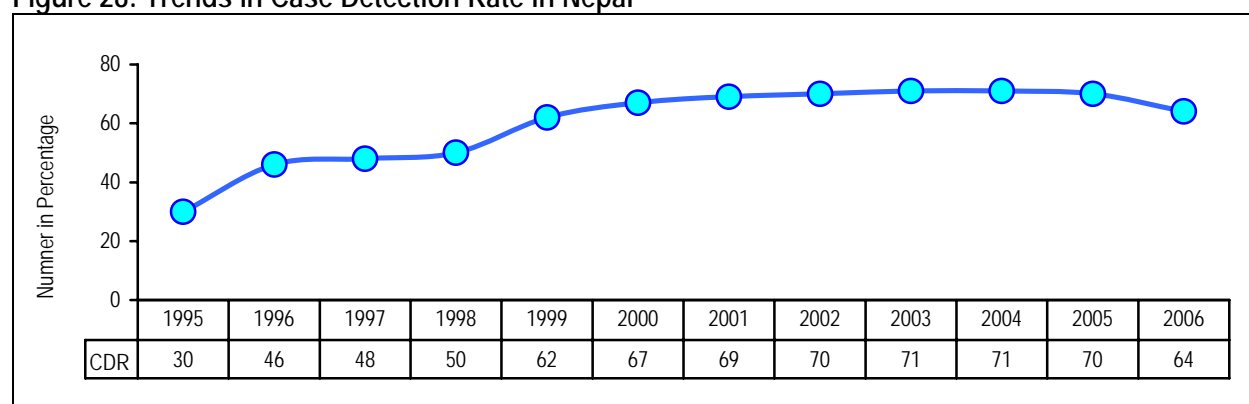


Figure 27 shows that there is variation of 1% in treatment failure since 2000, while defaulter rate has improved and remains around 3% since 2003.

Figure 28: Trends in Case Detection Rate in Nepal



Source: NTP Report 2005/6

The case detection rate of new Sputum Smear Positive is consistently improving along with the improvement in DOTS coverage till 2005. However, it is found to be decreased and reached 64 % in 2006.

## 5. Challenges

- Ensuring access and utilization of health services
- Expanding involvement of private sector in urban and peri-urban areas
- Expanding program to mountain and hill districts
- Strengthening National TB Reference Laboratory for culture and DST
- Making available culture and DST services in Regional laboratories
- Establishing collaboration between TB and HIV program
- Continuing DOTS Plus services
- Providing services to mobile and internally displaced population
- Establishing mechanism to deal cross border issues with regard to TB control

## 6. Planned Activities

- Establish, through bilateral and multilateral consultations, cross-border disease control services including DOTS in the border districts
- Development of 50 bedded hospital with basic laboratory facilities
- Establishment of Reference laboratory at NTC
- Development of curriculum for medical colleges and training institution
- Access to DOTS to all TB cases by establishing NTP services in each health institution
- Expansion of DOTS –Plus Pilot Project for the management of Multi-drug resistant tuberculosis (MDR-TB)
- Conduct relevant research

- Availability of Chest Physician at every zonal, Regional and central hospital
- Collaboration between TB & HIV/AIDS control program
- Increase access to DOTS in the hard-to access mountainous Regions

**References:**

1. National tuberculosis control programme, Annual report 2005/06
2. Tuberculosis in SAARC region an Update 2006, SAARC TB and HIV/AIDS center



# Pakistan

## 1. Status of Tuberculosis Control

TB has been prevalent in Pakistan and unfortunately it has been one of the neglected health areas in past. Pakistan ranks 6<sup>th</sup> position amongst the countries with a highest burden of TB in the world. NTP Pakistan adopted the DOTS strategy in 1995. The national guidelines were developed and few pilot projects were also started. The progress during the first three years (i.e. 1995 – 1998) was slow, mainly because it had a vertical approach; there was a lack of consensus between federal and provincial NTP Units, and non-availability of funds from regular health budget. In 1998 the roles and relationship between the federal and provincial tuberculosis control programs were re-defined and agreed. Ministry of Health declared TB as a National emergency in 2001. A Multi year strategic plan was developed for universal coverage of DOTS by year 2005.

In the year 2006, 173160 all types of TB cases notified (111.5/100000), of which 65391 were smear positive (40.6/100000) and capable of spreading the disease to others

**Table 20: Key Indicators of TB in Pakistan**

Population, estimated 2006	161164000
DOTS Coverage - 2006	100%
Case detection rate – all type -2006	63.0%
Case detection rate- New Sputum Smear Positive - 2006	51.0%
Cure rate - 2005	74.0%
Treatment Completed Rate - 2005	13.0%
Treatment Success Rate - 2005	87.0%

Source: NTP Report – 2006

## 2. DOTS Progress

Pakistan adopted the DOTS strategy in 1995 and started DOTS demonstration activities in some areas. DOTS coverage has increased rapidly since 2000, reaching 100% in 2006. DOTS is continuing to expand, and the overall TB control system is steadily improving.

The smear positive case detection rate under DOTS is increasing; it was 2.8% in 2000 and reached 51% in 2006. The treatment success rate under DOTS is also increasing, from 67% in 1997 and reached 87% in 2006. Pakistan has been highly successful in mobilizing financial support for TB control from the international community, and this has given impetus to the program. The Government has continued to accord TB control services a very high priority and NTP has continued to make good progress.

Figure 29: Trend of Case Detection Rates, Pakistan

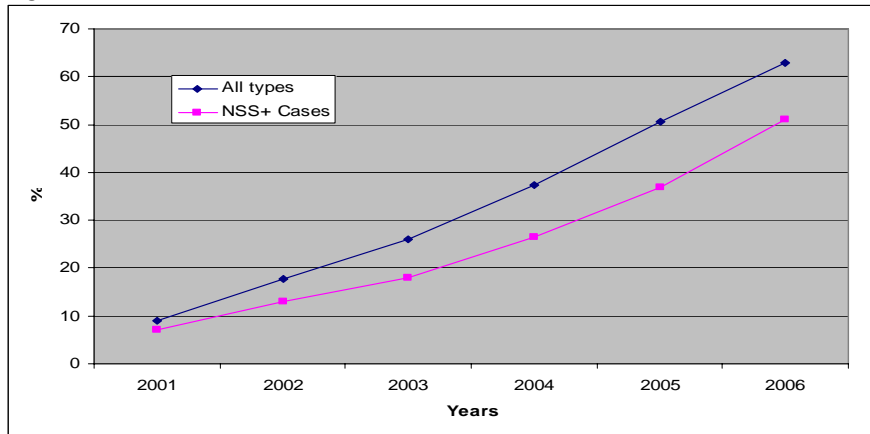


Figure 30: Treatment success rate of new sputum smear positive cases, Pakistan

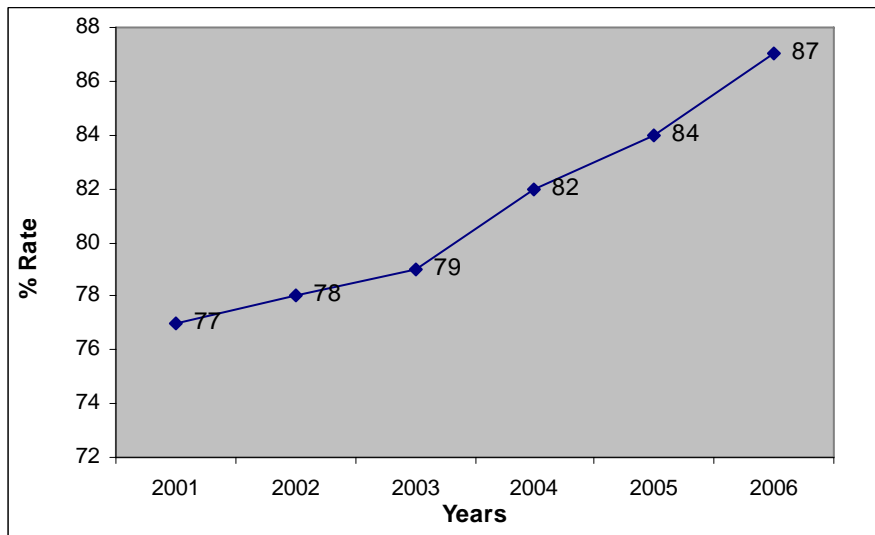
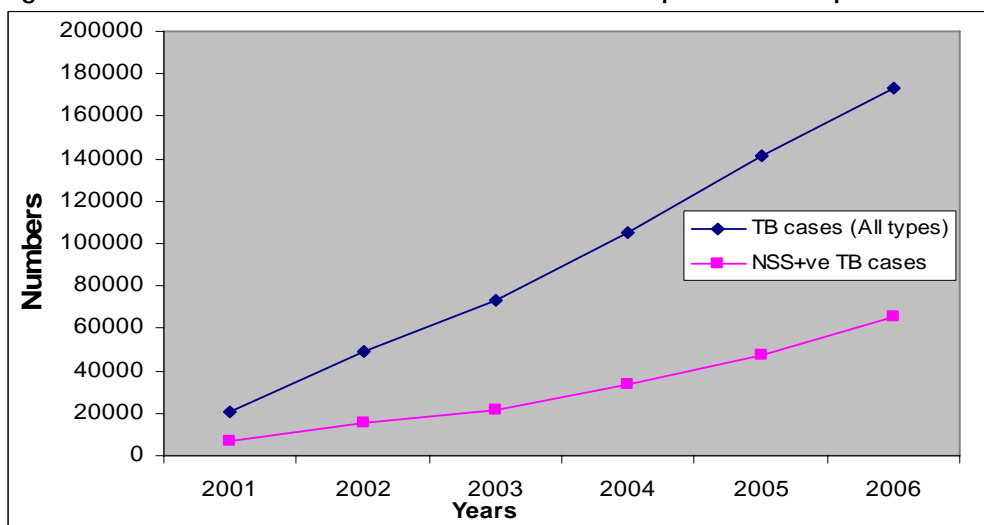


Figure 31: Trend of absolute Number Total and new sputum smear positive TB cases



## 5. Challenges and Future Plans

Although remarkable progress has been shown over the last five years, the National TB Control Programme will need to carry on its activities with renewed vigor and an expanded framework in order to achieve its regional and global targets including the Millennium Development Goals (MDGs).

- Strengthening of QA system for Smear Microscopy
- Capacity building and various levels (Human Resource Development for sustainability)
- Enhance local partnerships

Expanding Public-public mix & private-public mix (Technical assistance for developing protocols and PPM model) involving the private sector will be a crucial activity as many of the TB patients seek care in the private sectors first, often getting a delayed diagnosis and / or an inappropriate treatment. Other partners to be involved are NGOs, social security institutions and other governmental sectors like Army and prisons. Tertiary care hospitals and teaching hospitals are at the moment only partially involved in the DOTS strategy although specific Urban DOTS projects have started in Lahore and Karachi is trying to address this specific issue aiming to tackle TB control in difficult settings. Establishing strong referral linkages between all levels of health care facilities.

- Addressing treatment compliance and default rate.
- Increase community involvement – enhance support to LHWs
- Strengthen Drug Management
- Increase awareness among general public through advocacy (communication strategy developed)
- Emerging threat of MDR TB
- DOTS Plus for a safe, lower cost, controlled treatment for MDR-TB cases
- TB/HIV collaborative activities
- Assess the epidemiological impact of DOTS (prevalence survey)
- Perform a nationwide MDR-TB survey.

### References;

1. National TB Control Programme, Historical perspective, Government of Pakistan, 2006
2. Tuberculosis in SAARC region an Update 2006, SAARC TB and HIV/AIDS center
3. National Tuberculosis control programme-Report, Pakistan, 2006

# Sri Lanka

## 1. Status of Tuberculosis Control

Sri Lanka is not among the high burden countries of tuberculosis. However, Tuberculosis remains a widespread problem and poses a continuing threat to the health and development of the people. Regarding the tuberculosis infection it is estimated that about 60% of adults and 45% of the general population have been infected with the disease. The annual risk of tuberculosis infection (ARTI) is falling slowly, with the decline estimated at about 2% per year. The highest rates of infection have been found in the most densely populated areas, such as Colombo and other urban areas.

Nearly 17,000 people (89/100000) are currently estimated to suffer from tuberculosis disease. Every year, it is estimated that more than 11,000 new cases (60/100000) arise. The estimated prevalence in 1990 was almost double from 2003, 31,000 cases or 182/100000 while the estimated incidence was the same (61/100000). About half of these new cases (more than 5000 annually or 27/100000) are sputum smear positive and if untreated, continue to spread the infection. Over 50,000 people are expected to develop TB disease during the next five years. The majority of these patients will be people in the economically active age group of 15-54 years.

Reported rates of smear-positive TB are substantially higher in males than in females, except among children, possibly because adult men are more frequently exposed to infection than women. The peak of smear positive disease in women is also at a much younger age than in men.

In 1990, it was deaths were estimated that about 2,700 people were dying from TB every year in Sri Lanka. Currently estimates have shown a profound decline in the number of deaths to about 1685 per year. This is primarily due to improvements in programme performance and demonstrates the immediate and significant impact of a good TB control programme.

In the year 2006, 9695 TB cases, all types notified (47/100000), of which 4868 were smear positive (24/100000) and capable of spreading the disease to others

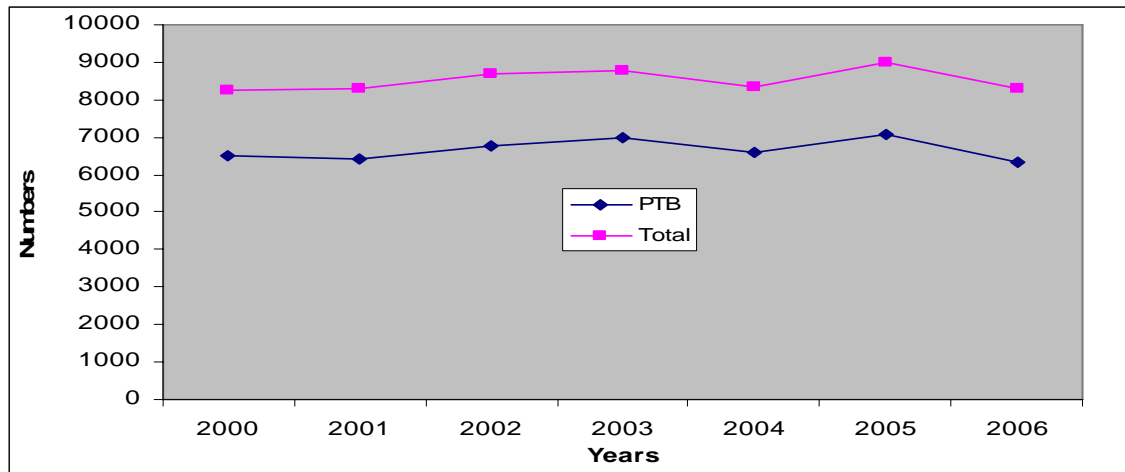
**Table 21: Key Indicators of TB in Sri Lanka**

<b>Population, estimated 2006</b>	20473000
<b>DOTS Coverage - 2006</b>	98%
Case detection rate – all type - 2006	77.2%
Case detection rate- New Sputum Smear Positive - 2006	86.2%
Cure rate - 2005	79.2%
Treatment Completion Rate - 2005	7.1%
Treatment Success Rate -2005	86.3%

## 2. DOTS Progress

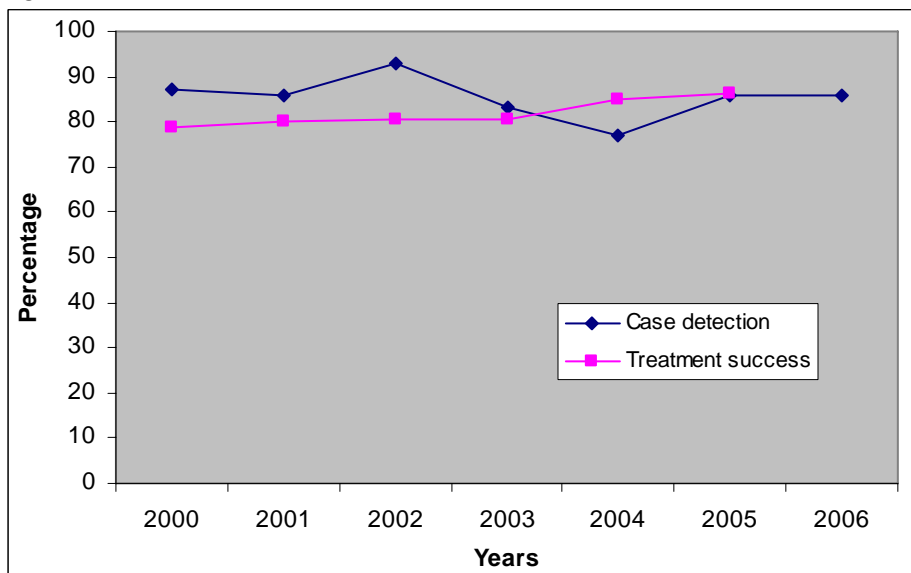
After adoption of DOTS strategy in 1994 Sri Lanka has made considerable progress with DOTS expansion. Nationwide DOTS coverage was achieved at the end of 2005. The basic unit for the purpose of administrative DOTS expansion was the district, with the district chest clinic as main focus.

Figure 32: Trend of case finding of TB in Sri Lanka



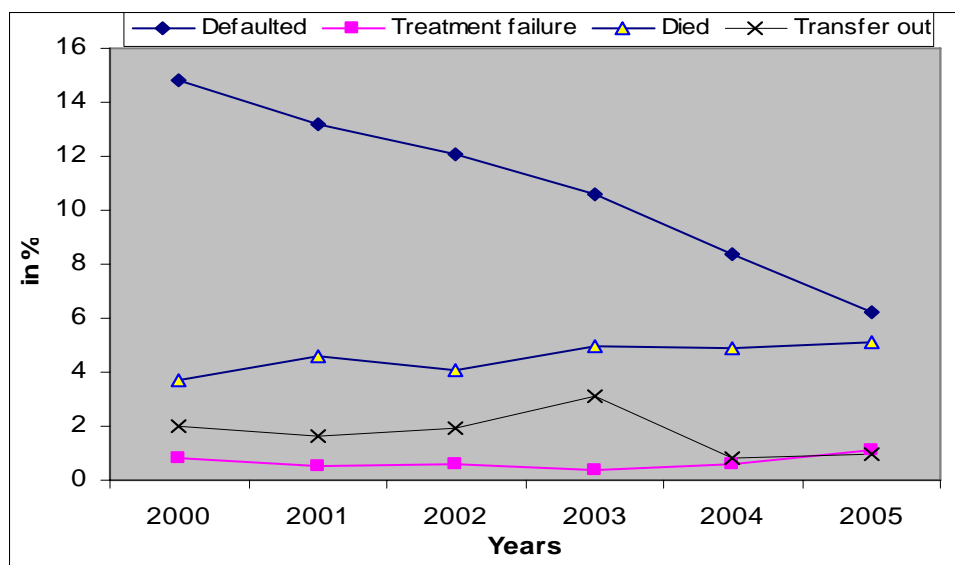
Above figure shows that the number of total as well as smear positive Tuberculosis reported are constant around 6000 for Smear positive and around 8000 for total TB cases since 2000.

Fig 33: Trend of Case detection and treatment success rate



The case detection rates varied within 77% to 93% from 2000-06. The 70% target has been reached since 2000. The treatment success rate shows steady improvement since 2003 and reached to 86% in 2005. Hence it has already achieved the global target of 85%.

Figure 34: Unfavorable Treatment Outcome



Above figure shows in comparing the treatment outcomes from 2000 onwards, treatment failure is found to be static around 1%, while defaulter rate is consistently decreasing from 2001 and reached to 6% in 2005.

## 5. Challenges and constraints

- **Human Resource** – It is very important to have the right people at the right time in the right place. The NPTCCD can avail the services of a qualified chest physician in only 6 out of 25 district chest clinics. There is a high turnover of staff, particularly of Medical Officers in the chest clinics and among the District TB Control Officers.
- **Sustained Funding** – For the piloting, scale up and full expansion of the DOTS programme, funding was made available from the Government's health budget, as well as from partners, including WHO, the World Bank, GFATM, GDF and Fidelis.
- **Access to services** – People in remote rural areas sometimes have problems using the TB services. Diagnostic services are located mainly in the district chest clinics. Though there is a good road network, delays are often created as unaware TB suspects need to be referred from the peripheral health units they are attending. Progress has been made in creating awareness on signs and symptoms and a good number of people do come directly to the chest clinic, at the expenses of incurred travel time and cost.
- **Data Management** – There are two notification systems for TB in Sri Lanka. The NPTCCD collects the standard DOTS reports on a quarterly basis. In addition, hospitals report separately on cases treated there. Those reports are not systematically sent to NPTCCD. There may be some overlap in cases. More frequently those cases are solely reported by hospitals that remain unknown to NPTCCD.
- **MDR TB** – It threatens the salutary impact of the DOTS programme. The paucity of data available makes it also difficult for the programme to judge the extent of the MDR TB problem. Although the programme could improve the treatment results in recent years, a considerable number of patients are treated outside the programme, with unknown treatment outcomes and often with undocumented follow up.

- **Integration of TB Control Service** – TB control services have until now been implemented in a fairly vertical way with the district chest clinics as main centers of service delivery. Although treatment is made available in more peripheral centres, other aspects of the programme, including diagnosis and registration have remained with the district chest clinics. The NPTCCD neither the district chest clinics have been involved in liaising with other health care providers at the district level or below offering TB control services. Those include, apart from private practitioners, six medical colleges and health services in other public sectors. Due to the turnover of staff, there are already trained doctors that were formerly posted in chest clinics, available in general hospitals, but they have not been further involved in the TB activities.

## 6. Planned Activities

- Strengthening of the technical capacity both at the central level and at the district level by increasing the number of relevant staff categories and by training.
- Nationwide expansion of fixed dose combinations.
- Regular supervision to guide introduction of FDCs and monitor Program implementation.
- Measures to improve coordination between central and provincial level in the form of having regular review meetings at district level
- Expand DOTS to have 100% population coverage
- Laboratory facilities for bacteriologic culture made available at provincial level
- Involvement of community leaders as DOT providers
- Strengthening of the Public-Private Mix
- Strengthening of outreach activities to reach those with limited access to DOTS
- Sensitization of corporate managers with a view to introduce “DOTS at work place”

## References:

1. NTP, report on TB to STC
2. National Programme for Tuberculosis Control and chest Diseases, Strategic plan (2006-2015), Srilanka
3. Srilanka, country presentation in Third SAARC regional Workshop on TB/HIV Co-infection, September, 2007
4. Tuberculosis in SAARC region an Update 2006, SAARC TB and HIV/AIDS center

# STC's support to TB control in the Region:

## 1. SAARC Regional TB Reference Laboratory and Lab Network

SAARC TB and HIV/AIDS Centre has identified nine Tuberculosis Laboratories in Member States as National TB Reference Laboratories. Subsequently, SAARC Regional TB Reference laboratory has been setup and TB Laboratory Network has been developed. Activities under Laboratory Network have been initiated by providing computer with accessories and printer to each National TB Reference Laboratory (NTRL) in the Region.

## 2. Human Resource Development

Trained manpower is one of the basic essential components for a successful TB control programme in the Member States. To develop trained manpower or upgrade the skills of the staff, STC organized different training/activities to support NTPs of Member States by organizing - Training for laboratory personnel in different subjects related with lab activities, Training on data management skills and Epidemiological training, Training of Trainers (ToT) for TB control management and Leadership training and Training on IEC activities etc.

## 3. Establishment of Epidemiological Network

Since 1994 STC has been collecting TB related data and preparing regional data. In order to have quality regional reports on TB, HIV/AIDS and TB/HIV co-infection Regional Epidemiological Networking has been developed in 2003. Since 2003 the center has been producing Yearly Update on TB and HIV/AIDS in separate volumes.

## 4. Development of Regional Strategies

### *SAARC Regional Strategies for TB/HIV Co-infection*

The STC has developed the SAARC Regional Strategy for TB/HIV Co-infection in 2003 under SAARC-Canada Regional TB/HIV co-infection, which was endorsed by the Twelfth SAARC Summit for implementation. The action plan for implementation was developed in 2004.

### *SAARC Regional Strategies on HIV/AIDS*

On the directive of 12<sup>th</sup> SAARC Summit SAARC Regional Strategy on HIV/AIDS has been developed in 2005 under the UNAIDS support to SAARC.

## 5. Research and study activities

STC has been supporting member countries for conducting different research and study activities in the forms of TB and HIV/AIDS related study, Gender and TB study, Barriers in TB control programme, Quality Assurance and Situation analysis of TB and HIV/AIDS.



## **6. NTP Review of Member States**

Participation in NTP review of Member States by the professional working in SAARC TB and HIV/AIDS Centre on their request.

## **7. Partnership Programme for TB and HIV/AIDS control with Schools, Media, Medical/Nursing Colleges, Private Practitioners, Pharmacists, Manpower Agency, Travel Agency and Industry**

STC has been supplementing Member States in their efforts by taking initiative to develop partnership and/or strengthening partnership with various stakeholders of TB control since 2000. The Guidelines for the Partnership Programmes have been developed and distributed.

## **8. Advocacy and Awareness**

STC has been organizing awareness and advocacy programmes on occasion of **World TB Day and SAARC Charter Day** since its establishment. Since 2004 the Centre has been also organizing similar programme on the occasion of World AIDS Day.

### **Observation of SAARC Awareness Year for TB and HIV/AIDS (Year 2004)**

The STC observed the year 2004 as the SAARC Awareness Year for TB and HIV/AIDS by organizing different awareness activities at the Regional level by developing an audio-visual documentary on advocacy on TB and HIV/AIDS which were distributed to the Member States. In this occasion STC also organized an essay competition focusing the issues of TB and HIV/AIDS at the regional level and special publications regarding SAARC awareness year 2004 for TB and HIV/AIDS in English language as well as in seven national languages had published and circulated widely.

## **9. Development of Common Protocols, Guidelines, Policies, Plan**

For the development of common Protocols, Policies, Strategies, Plan and Guidelines and solution of common issues, STC has been organizing various Seminars, Workshops and Meetings

## **10. Sharing Experiences and Expertise**

Besides organizing workshops, seminars, meetings and visits for sharing expertise and experiences, STC organized regional conference for the first time in 2004 on TB, HIV/AIDS and Respiratory Diseases in Kathmandu, Nepal. Around 600 participants from Member States and other countries participated in the conference.

## **11. Collaboration with International Organizations in TB Control**

SAARC has made collaboration and understanding with different UN agencies and INGOs for smooth functioning in control of TB and HIV/AIDS in the Region.

An MoU between SAARC and WHO was signed on 23 August 2000 to work collectively for TB & HIV/AIDS and to continue active collaboration with WHO.

In order to contain the TB and HIV/AIDS epidemic SAARC and CIDA signed a Memorandum of Cooperation in July 1997 to work in TB control in Member States. In this context STC worked in development of Regional Laboratory Network, Regional Epidemiological Network and Regional Strategy for TB/HIV Co infection.

## **12. Publications of STC**

The center has been publishing different documents for sharing and disseminating information in TB and its control, such as STC Newsletters, Directory of TB and HIV/AIDS Institutions & Specialists in SAARC Member States, SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS, General Information on TB and HIV/AIDS, Epidemiological information, Study Reports, Strategies and Reports.

## **13. Resource Centre**

A library has been established as a resource centre for TB and HIV/AIDS information. Books, journals, newspapers, reports and other related publications/documents are catalogued for the use of TB control workers, researchers, specialists, medical practitioners, students, journalists and general people.