



SAARC Tuberculosis and HIV/AIDS Centre

**TUBERCULOSIS
IN THE SAARC REGION
AN UPDATE 2006**

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Foreword

This is the fourth annual report on TB situation in the SAARC region and it is an update of the previous one. It includes information on population coverage by DOTS, case detection, treatment outcome of TB control programs of seven Member States of SAARC. Though it is the fourth report of such kind it covers the available information on TB control since the late 1990s to show the progress towards TB control targets for case detection rate (70%) and treatment success rate (85%) by 2005 set by the World Health Assembly of WHO.

This report has been prepared on the basis of information collected from Member States during the year 2005 (and early part of the year 2006) and reviewing other documents including WHO Report 2005 on Global TB Control. In this report, DOTS coverage and case detection rates are on the basis of 2004 data and treatment outcome is for the 2003 cohort. But some latest information available from country report is also highlighted.

This report suggests that remarkable progress in TB control has been made in this region since the introduction of DOTS strategy, for example i) Nearly whole of the Region is covered with DOTS strategy and people have access to DOTS services where free diagnostic and treatment services are available. ii) Over one million TB patients are being registered under DOTS in Member States of this region every year. iii) Treatment success rates under DOTS are around 85% in most countries of the region and over-all regional rate is 85%. Countries of the region are committed to achieve target (Number 8) of Millennium Development Goal (Number 6) for TB Control. 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 and
- Tackling migration & cross border issues.

Quality report on TB epidemiology plays an important role in programme planning and advocacy and thereby helps in achieving the success in prevention and control of TB. The present report "Tuberculosis in the SAARC Region, an up date 2006" is such an attempt.

The SAARC Tuberculosis and HIV/AIDS Center (STC) in Kathmandu, Nepal, would like to thank the epidemiologists and experts within WHO and SAARC Member States who have generated and shared the epidemiological data and facts utilized for this report. Special thanks go to Dr. Rano Mal Piryani, Consultant HIV/AIDS & TB, STC who gave maximum effort to prepare the report. Contribution provided by others is gratefully appreciated. The centre acknowledges with thanks the assistance provided by its General Services Staff.

STC is very much indebted to H. E. SAARC Secretary General and Directors of SAARC Secretariat for their guidance and support. STC is also thankful to other staff of SAARC Secretariat for their cooperation.

We look forward to your comments and suggestions, and continued collaboration in our joint efforts to broaden the partnership for control of tuberculosis in the SAARC region.

Dr. Kashi Kant Jha
Director
SAARC TB and HIV/AIDS Centre

Abbreviations and Acronyms

ACSM	Advocacy Communication & Social Mobilization
AFB	Acid Fast Bacillus
ART	Anti Retroviral Therapy
BCG	Bacillus Calmat Gurine
BRAC	Bangladesh Rural Advancement Committee
CBO	Community Based Organization
CDR	Case Detection Rate
DDR	DOTS Detection Rate
DFB	Damien Foundation Belgium
DOT	Directly Observe Treatment
DOTS	Directly Observe Treatment Short-course
DRS	Drug Resistance Surveillance
DST	Drug Susceptibility Test
DTC	District Tuberculosis Centre
EQA	External Quality Assurance
ESP	Essential Service Package
FDC	Fixed Dose Combinations
GFATM	Global Fund for AIDS, TB and Malaria
H.E.	His Excellency
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HNPSP	Health Nutrition Population Sector Program
HR	Human Resource
I/NGO	International Governmental Organization
IEC	Information Education and Coordination
IGMH	Indira Gandhi Memorial Hospital
IUATLD	International Union Against Tuberculosis
LHW	Lady Health Worker
MDG	Millennium Development Goal
MDR	Multi Drug Resistance
MOH	Ministry of Health
NACO	National AIDS Control Organization
NACP	National AIDS Control Programme
NATA	Nepal Anti-TB Association
NGO	Non Governmental Organization
No.	Number
NPTCCD	National Programme for Tuberculosis Control and Chest Diseases
NRL	National Reference Laboratory
NTI	National Tuberculosis Institute
NTP	National Tuberculosis Programme
P.O.	Post Office
PLWHA	People Living With HIV/AIDS
Pop	Population

PPM	Public Private Mix
RNTCP	Revised National TB Control Programme
SAARC	South Asian Association for Regional Cooperation
SCC	Short Course Chemotherapy
SIDA	Swedish International Development Agency
SS	Sputum Smear
STC	SAARC Tuberculosis and HIV/AIDS Centre
TB	Tuberculosis
TRC	Tuberculosis Research Centre
UNICEF	United Nations Children Emergency Fund (United Nation's Children Fund)
VCT	Voluntary Counseling and Testing
VCTC	Voluntary Counseling and Testing Centre
WHO	World Health Organization
yr	Year

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Summary

This is the fourth annual report on "TB situation in the SAARC region" and it is an update of the previous one. It includes information on population coverage by DOTS, case detection rate and treatment outcome of seven member countries of SAARC and challenges ahead. Though it is the fourth report of such kind it covers the available information on TB control since the late 1990s to show the progress towards TB Control targets for case detection rate (70%) and treatment success rate (85%) by 2005 set by the World Health Assembly of WHO and target 8 of the Millennium Development Goal (MDG) 6 to have halted and begun to reverse TB incidence by 2015, to halve TB prevalence and deaths rates between 1990 and 2015 (indicator 23).

This report has been prepared on the basis of information and documents collected from member countries during the year 2005 and reviewing the WHO report 2006 on Global TB control. So in this report, DOTS coverage and case detection rates are on the basis of 2004 data and treatment outcome is for the 2003 cohort. But some latest information available from country reports/documents is also highlighted.

Remarkable progress has been made in this region since the adoption of DOTS strategy

- Over 84% of the Region covered with DOTS as of December 2004 and most of the people have access to DOTS services where free diagnostic and treatment services are available.
- About 1.5 million patients were registered under DOTS in this region in 2004
- Overall regional treatment success rate under DOTS is 85%.

Pakistan reported full DOTS coverage by the end of 2005 and coverage has increased considerably in India with the rapid expansion of DOTS in 2005, the region might have approached to 100% DOTS coverage in public sector. The case detection rate in the region in 2005 might be close to 70%. The member countries are committed to achieve targets of MDGs directly or indirectly related to TB control. 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 and
- Tackling migration & cross border issue

Tuberculosis in the SAARC Region - an update 2006

1. Introduction

The South Asian Association for Regional Cooperation (SAARC) comprises Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. SAARC is a 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.

SAARC Tuberculosis (TB) and HIV/AIDS Centre is one of the Regional Centres of SAARC, located in Kathmandu, Nepal. Three years before the declaration of TB as a Global Emergency by World Health Organization (WHO), the Heads of State or Government of Member Countries of SAARC at their Fifth Summit held in Male from 22 to 23 November 1990 decided that SAARC Tuberculosis Centre would be set up in Nepal. It is established in 1992 and become fully functional in 1994. 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. The Centre has been renamed as **SAARC TB & HIV/AIDS centre** in November 2005.

One of the main functions of this centre is to collect, collate, analyze and disseminate latest 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 (& HIV/AIDS) since 2003.

This particular report is on TB situation in the SAARC Region and is the fourth of its kind. The aim of these reports is to chart the progress in TB control in Region, and in particular, progress in implementing the Directly Observed Treatment Short course (DOTS) strategy, a cost effective approach to control TB, recommended by WHO. This report presents information on DOTS coverage and case notifications for 2004 and treatment outcomes for patients registered in 2003. It covers the available information on TB control since the late 1990s to show the progress towards the Millennium Development Goals (MDGs) for TB control.

2. Global Situation of TB

An estimated 8.9 million new cases of TB occurred in 2004 at the rate of 140/ 100000 population, of which 3.9 million (62/100000 pop) were smear positive and 741000 were in adults infected with the human immunodeficiency virus (HIV). 14.6 million were estimated to be prevalent TB cases at the rate of 229/100000 pop, of which 6.1 million were smear positive (95/100000 pop). More than 80% of all new TB patients in 2004 was in the African, South East Asia and Western Pacific Region. An estimated 1.7 million people (27/100000 pop) died from TB in 2004, including those co infected with HIV (248000).

A total of 183 countries and territories were implementing the DOTS strategy during 2004. By the end of 2004, 83% of the World's population lived in countries, or parts of countries, covered by DOTS. At the end of 2004, DOTS expansion was complete in nine High Burden Countries (HBCs) and nearing completion in five others. Pakistan reported full DOTS coverage by the end of 2005, and coverage has increased considerably in Afghanistan, Brazil, India & the Russian Federation.

DOTS programs notified 4.4 million new and relapsed TB cases in 2004, of which 2.1 million were new smear positive. In total, 21.5 million TB patients, and 10.7 million new smear positive patients, were treated in DOTS programs over the 10 years 1995-2004.

The 2.1 million smear-positive cases notified by DOTS program in 2004 represent 53% of the estimated incidence. The increment in smear-positive cases notified under DOTS between 2003 and 2004 (350000) was greater than ever before (the average annual increment from 1995 to 2000 was 134000).

Treatment success in the 2003 DOTS cohort of 1.7 million patients was 82% on average, edging closer to the 85% target. As in previous DOTS cohorts, treatment success was substantially below average in the African Region (72%) and the European Region (75%). The relatively poor outcomes in these two Regions can be attributed, in part, to the complications of HIV co infection and drug resistance, respectively.

Based on case reports and WHO estimates, 26 countries had reached the targets for case detection and treatment success by the end of 2004.

There are few good data with which to establish TB prevalence and death rates for the MGDs baseline year of 1990 available as for as epidemiological trends and the impact of TB Control is concerned. WHO best estimates are that prevalence fell from 297/100000 pop globally in 1990 to 229/100000 pop in 2004 (including HIV-positive TB patients), partly as a consequence of DOTS expansion. TB mortality declined from 29 per 100000 in 1990 to 27 per 100000 in 2004. But for the strongly adverse trends in Africa, prevalence and death rates would be falling more quickly worldwide. The epidemiological forecast for 2005 and beyond is set out in the Global Plan to Stop TB, 2006-2015. The Global plan describes how the Stop TB Strategy be implemented. (Annex I-Goals, target and indicators for TB control, annex II-The Stop TB Strategy and annex III-Technical elements of the DOTS strategy)

3. Situation of Tuberculosis in SAARC Region

3.1. Tuberculosis Burden 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 2004 an estimated 2.5 million people newly developed TB disease (174/100 000 population), of which about 1.11 million (78/100000) were smear positive and capable for spreading the disease to others.

According to this estimate SAARC Region was bearing 27.9% of the total global new TB cases (with 22.4% of population share). India, Bangladesh and Pakistan are occupying the 1st, 6th and 7th position in the list of 22 high burden nations {*according to estimated incidence (absolute number) of TB: high burden countries.2004*} with India revealing the highest (20.45%) global absolute burden of TB. These 3 SAARC nations account for 27.18% of the total global new TB cases.

An estimated 470888 people (36/ 100 000) died from TB in 2004, including those co-infected with HIV (20912). 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 losses due to TB are huge.

By adopting DOTS strategy this Region has been started to show success in TB control. By the year 2004 SAARC Region has covered over 84% of its population with DOTS and detected 52% of the total estimated new smear positive cases. This Region has already achieved the target of 85% treatment success rate of detected new smear positive cases. The treatment success rate for the 2003 cohort was 85% (refer annex IV and V for definitions of tuberculosis cases and treatment outcomes). 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 issue

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 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 income⁵. Within India, 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.

3.2. Progress made in the implementation of DOTS in the SAARC Region

Remarkable progress has been made with Directly Observed Treatment Short-course (DOTS) since its inception in 1993 by the Region. By 1996 all member countries started DOTS strategy for TB control (Table 1)

Table 1
DOTS adoption by SAARC Member Countries

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

In 2004, over 84% percent of population of the Region were covered with DOTS (Table 2). Population coverage in 1997 was merely 11%, since then it has been increasing and reached to 84% in 2004 (Table 3 & Figure 4).

Table 2
DOTS Population Coverage in SAARC Countries, 2004

Country	*Estimated population	DOTS Coverage (%)	**Pop. Covered
Bangladesh	139215000	99	137822850
Bhutan	2116000	90	1904400
India	1087124000	84	913184160
Maldives	321000	100	321000
Nepal	26591000	100	26591000
Pakistan	154794000	79	122287260
Sri Lanka	20570000	88	1804880
Regional	1430731000	84	120220155

Source: *Global Tuberculosis Control - WHO Report 2006

Note: **Population covered of country is calculated from estimated population & DOTS Coverage % and then population covered in SAARC Region is calculated by adding population covered in each country.

Table 3
DOTS Population Coverage in SAARC Countries, 1997 - 2004

(Figures in %)

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

Source: Tuberculosis in the SAARC Region- an update 2005;

*Global Tuberculosis Control - WHO Reports 2006

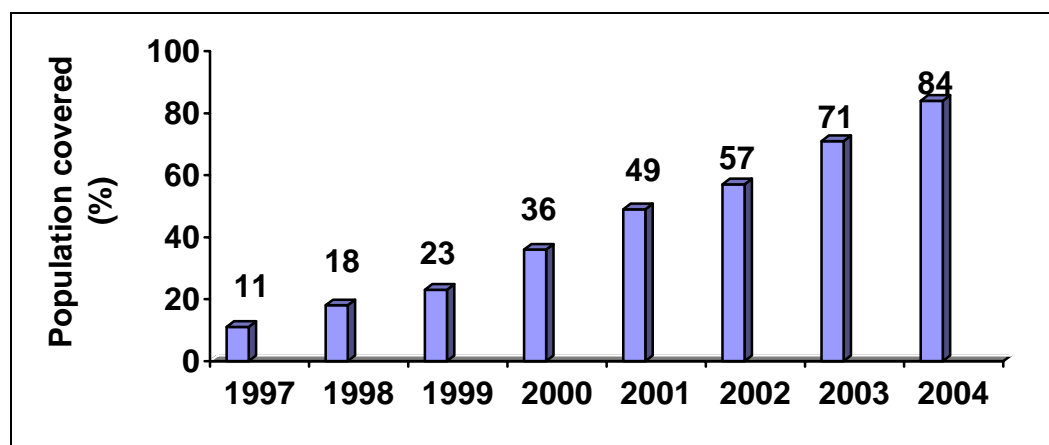
**DOTS coverage reported by WHO and NTP Sri Lanka differs.

DOTS coverage (%) trend of Sri Lanka according to information collected from NTP Sri Lanka is given below:

(Figures in %)

Year	1997	1998	1999	2000	2001	2002	2003	2004
DOTS coverage (%)	5.2	11.97	25.39	54.3	74.23	74.23	80.65	97.61

Figure 1
DOTS Coverage in SAARC Region



Source: Global Tuberculosis Control - WHO Reports 2006
Tuberculosis in the SAARC Region- an update 2005

Under the DOTS strategy, a total of 1293877 TB cases (New & relapse) including 580564 new smear positive were notified in this Region in 2004; the case detection rate for new smear positive was 52 % (Table 4). Overall case detection rate (DOTS & Non DOTS areas) in the Region in 2004 for all type of TB cases and new smear positive cases were 62 % and 54 % respectively (Table 5). Trend of case detection rate of New SS+ Cases, in Region from 1997 to 2004 is shown in table 6.

Table 4
DOTS coverage and DOTS detection rate in SAARC Region, 2004

Countries	Population	DOTS Notifications		DOTS detection rate (New Sputum Smear +ve)		
		New & relapse	New ss+	Estimated	Notified	DDR
Bangladesh	139215000	98234	62500	143637	62500	44
Bhutan*	2116000	988	356S	1019	356	35
India	1087124000	1053384	465354	814570	465354	57
Maldives	321000	119	66	71	66	93
Nepal	26591000	31979	14614	21868	14614	67
Pakistan	154794000	101562	33746	126155	33746	27
Sri- Lanka	20570000	7611	3928	5597	3928	70
Region	1430731000	1293877	580564	1112197	580564	52

Source: Global Tuberculosis Control - WHO Reports 2006

Note: *The population estimate used by the NTP Bhutan (0.80 million) differs from that of the United Nations Population Division (2.11 million). Using the smaller estimates gives a notification rate for new smear positive case of 45/100000 population, and a smear positive case detection rate of 92%.

Table 5
TB notifications and case Detection rate in SAARC Region, 2004 (DOTS & Non DOTS Area)

Countries	Population	No. of Notified TB cases		No. of Estimated TB		Case detection rate (%)	
		All cases	New SS+	All cases	New SS+	All cases	New SS+
Bangladesh	139215000	98234	62500	319252	143637	31	44
Bhutan	2116000	1002	356	2265	1019	44	35
India	1087124000	1275998	489031	1824395	814570	70	60
Maldives	321000	119	66	157	71	76	93
Nepal	26591000	32678	14614	48834	21868	70	67
Pakistan	154794000	104842	33746	280597	126155	37	27
Sri- Lanka	20570000	8952	4302	12445	5597	72	77
Region	1430731000	1530825	604615	2487945	1112917	62	54

Source: Global Tuberculosis Control-WHO Reports 2006

Note: Estimation for all cases reported by WHO Regional Office for South-East Asia for Bangladesh (360767), Bhutan (2492), India (1788043), Maldives (142), Nepal (53139) and Sri Lanka (11530) differ from estimation reported by WHO Geneva. This could be due difference in parameters applied for estimation

Table 6
Case Detection Rate of New Sputum Smear Positive Cases in SAARC Region

Country	1997	1998	1999	2000	2001	2002	2003	2004*
Bangladesh	25	27	27	26	28	33	33	44
Bhutan	23	21	24	27	26	31	32	35**
India	34	34	42	42	47	50	54	60***
Maldives	91	82	106	86	88	92	106	93
Nepal	53	52	61	64	64	66	60	67****
Pakistan	0	12	5	3	10	13	17	27
Sri- Lanka	71	75	79	87	86	93	83	77
Region	30	31	37	37	41	44	47	54

Source: Tuberculosis in the SAARC Region - an update 2005.

*Global Tuberculosis Control-WHO Reports 2006.

**The population estimate used by the NTP Bhutan (0.80 million) differs from that of the United Nations Population Division (2.11 million). Using the smaller estimates gives a notification rate for new smear positive case of 45/100000 population, and a smear positive case detection rate of 92%.

*** According to country report (TB India 2005 RNTCP Status Report).

**** According to country report (Annual Report NTP Nepal 2004/2005).

Overall Regional treatment success rate of 451810 registered new smear positive TB patients in 2003 was 85% (Table 7 & 8) under programmatic conditions in areas where the strategy has been applied.

Table 7
TB Treatment Success Rate for New Sputum Smear Positive Case Registered in 2003 under DOTS in SAARC Region

Countries	Registered	Cured (%)	Completed (%)	Treatment Success	
				Rate (%)	#*
Bangladesh	53618	83	2	85	45575
Bhutan	384	85	4	89	342
India	358778	85	1	86	308549
Maldives	68	91	0	91	62
Nepal	14348	86	1	87	12483
Pakistan	20962	62	13	75	15722
Sri- Lanka	3652	79	2	81	2958
Region	451810			85	385691

Source: Global Tuberculosis Control-WHO Reports 2006

*# calculated on the basis of the given rate (which has been rounded) and registered cases

Table 8
Treatment Success Rates in DOTS Area in SAARC Region (1996-2003 Cohort)

Countries	1996	1997	1998	1999	2000	2001	2002	2003*
Bangladesh	72	78	80	81	83	84	84	85
Bhutan	96	85	90	85	90	93	86	89
India	79	82	84	82	84	85	87	86
Maldives	93	94	94	94	97	97	95	91
Nepal	85	87	89	87	86	88	86	87
Pakistan	--	67	66	70	74	77	77	75
Sri- Lanka	80	76	76	84	77	80	81	81
Region	75	79	81	82	83	85	86	85

Source: Tuberculosis in the SAARC Region- an update 2005

*Global Tuberculosis Control-WHO Reports 2006

"--" Data not available

In the year 2004, 34.7% of global notified cases were from SAARC member countries (Table 9).

Table 9
Global vs SAARC Region on DOTS Coverage (2004), Case Detection Rate of New Sputum Smear Positive (2004) & Treatment Success (2003 cohort)

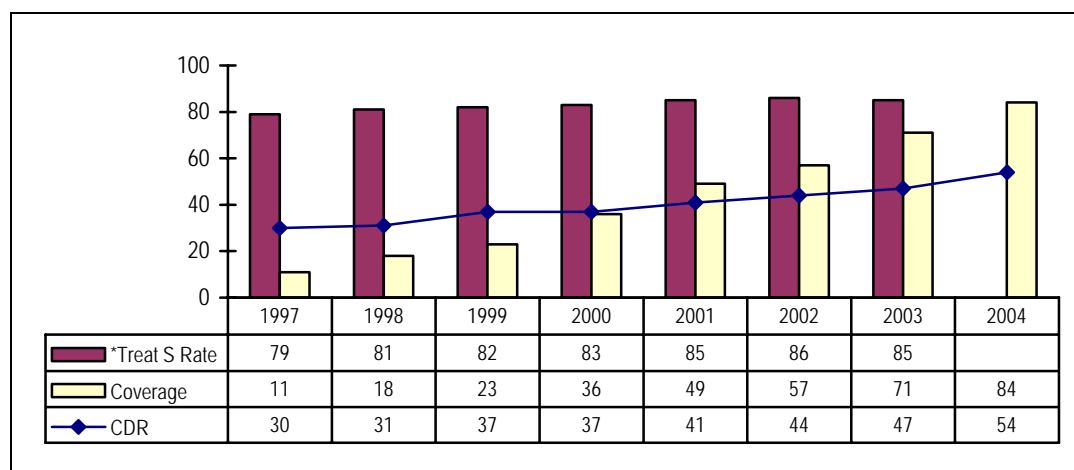
	Global	SAARC
Estimated Population (2004)	6386642000	1430731000
New ss+ TB Cases notified (2004)	1740725	604615
New ss+ TB Cases Estimated (2004)	3900000	1112917
Rate New ss+ TB Cases	62/100000	78/100000
DOTS Coverage % (2004)	83	84
New ss+ Case Detection % (2004)	53	54
Treatment Success % 2003 cohort	82	85

Source: Global Tuberculosis Control - WHO Reports 2006

With the rapid expansion of DOTS in India and Pakistan in 2005 the Region might have approached to 100% DOTS coverage in public sector. Pakistan reported full DOTS coverage by the end of 2005 and coverage has increased considerably in India. The case detection might be close to 70%

Over all progress in TB control in the SAARC Region in 2004 is shown in Figure 2.

Figure 2
Progress in TB control in SAARC Region



Source: Global Tuberculosis Control-WHO Reports 2006
Tuberculosis in the SAARC Region- an update 2005

*Previous year cohort

4. Progress with TB Control in SAARC Member States

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

Bangladesh

1. Status of Tuberculosis Control

A major sector-wide approach to health reform- the 1998-2003 Health and Population Sector Program (HPSP) – integrated the national TB Program as part of the Essential Services Package (ESP). The aim was to improve equity and access to all essential public health interventions, including TB care. The DOTS strategy was introduced in 1993; the key components of the strategy have been integrated within the ESP.

The NTP has been recognized as a priority in the revised Health, Nutrition and Population Sector Program. The long-term sustainability of TB has been ensured through direct community participation and through collaboration with national NGOs like Bangladesh Rural Advancement Committee (BRAC) and the Damien Foundation, Belgium (DFB). Prisons and medical college hospitals have introduced DOTS. NGOs have been largely responsible for delivering DOTS services for many years; have had a formal involvement in the NTP since 1994. In fact participation of NGOs in program delivery continues to be a huge asset, while the government of Bangladesh ensures coordination and sustainability of TB control. Key indicators of TB are shown in Table 13.

Table 13
Key Indicators of TB in Bangladesh
Global Rank by estimated number of cases in 2004 - 6

Population	139215000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	229
Incidence (ss+/100000pop/yr)	103
Prevalence (all cases/100000pop)	435
Mortality (deaths/100000pop/yr)	51
Prevalence of HIV in adult TB patients (15-49yrs, %)	0.1
New TB cases Multi-drug-resistant (%)	1.6
Previously treated TB cases Multi-drug – resistant (%)	12
% of DOTS Coverage in 2004	99
Surveillance & DOTS implementation (2004)	
Notification rate (new and relapse/100000 pop/yr)	71
Notification rate (new ss+/100000/yr)	45
Case detection rate (all cases, %)	31
Case detection rate (new & relapse, %)	31
Case detection rate (new ss+, %)	44
DOTS notification rate (new and relapse/100000 pop/yr)	71
DOTS notification rate (new ss+100000pop/yr)	45
DOTS case detection rate (new and relapse, %)	31
DOTS case detection rate (new ss +, %)	44
DOTS treatment success (2003 cohort, %)	85

Source: Global Tuberculosis Control-WHO Report 2006

2. DOTS Progress

Treatment success rates under DOTS have attained WHO target of 85% in 2003 cohort. Case detection rate was 33% in 2002, 38 % in 2003 and 44% in 2004 suggesting that it is increasing more rapidly, however, it is still below 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. (Table 14, Figure 5, & 6)

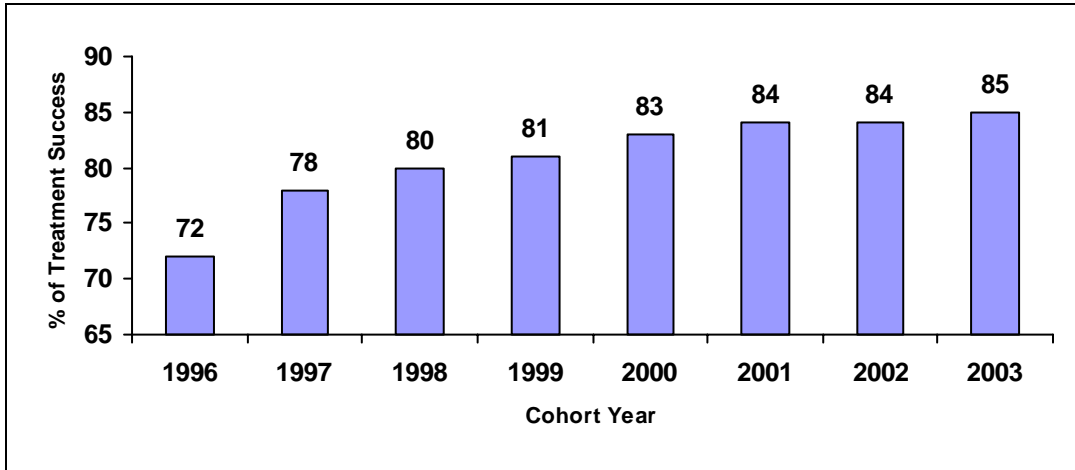
Table 14
DOTS Progress in Bangladesh

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
DOTS coverage (%)	41	65	80	90	90	92	95	95	99	99
DOTS notification rate (new & relapse/100 000)	12	26	33	43	56	46	48	54	65	71
DOTS notification rate (new ss+/100 000)	7.9	16	21	27	27	28	29	34	39	45
DOTS case detection rate (new & relapse/%)	4.7	11	14	18	23	19	21	23	28	31
DOTS case detection rate (new ss+, %)	7.0	15	19	24	25	26	28	32	38	44
DOTS Case detection rate (new ss+) / coverage (%)	17	23	24	27	28	28	29	34	38	44
DOTS treatment success (New ss+, %)	71	72	78	80	81	83	84	84	85	-----
DOTS re-treatment success (ss+, %)	75	57	58	74	72	76	"-"	69	73	-----

Source: Global Tuberculosis Control-WHO Report 2006

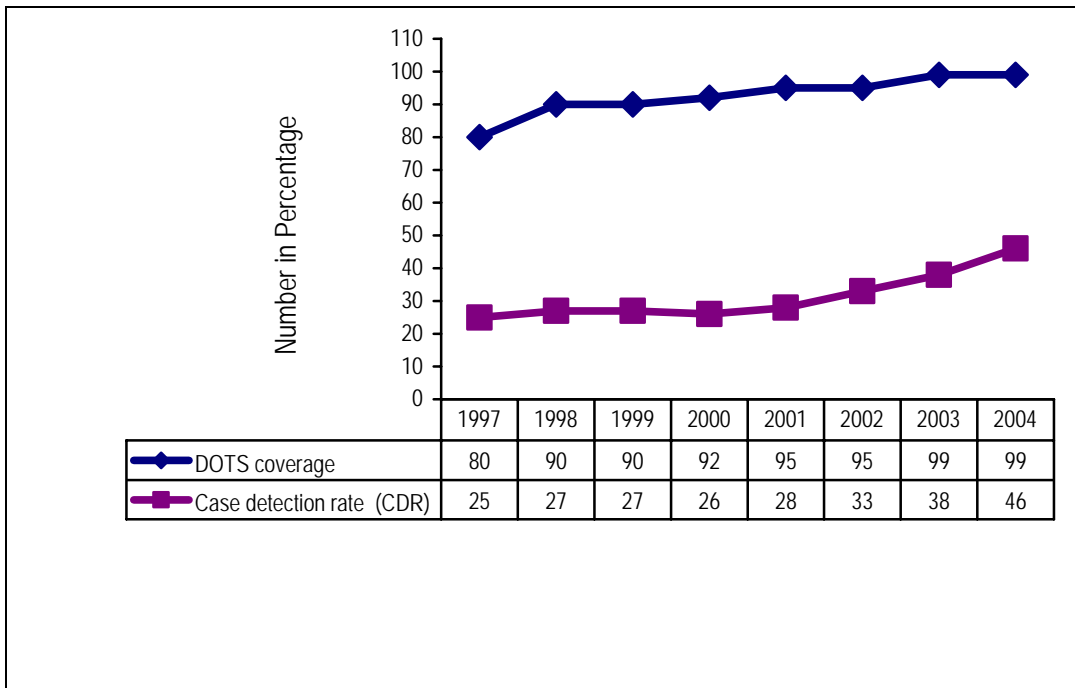
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Figure 5
Treatment success rates of New Sputum Smear Positive in Bangladesh



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005
History of TB Control Program in the SAARC Region (1st Edition 2005)

Figure 6
DOTS Coverage and Case Detection Rates of New Sputum Smear Positive in Bangladesh



Source: Tuberculosis in the SAARC Region-an update 2005

3. Efforts for tackling MDR TB

The rates of MDR-TB do not appear to be high; the absolute number of new MDR-TB cases is high considering the high TB burden. Studies by NGOs show that 90% of failures to category 2 regimens are MDR-TB. The country wants to give more attention to the management of MDR TB cases. The NTP in Bangladesh plans to improve the management of MDR-TB cases, in line with the policy of providing treatment to all TB patients and to reduce MDR-TB transmission and deaths. Building in-country capacity for developing culture and drug sensitivity testing (DST) to address the issue of drug resistance has been included in the 5th round GFATM proposal. The availability of these services will assist NTP in two ways: 1) monitoring drug resistance trends through periodically conducted drug resistance surveys and 2) adjusting and fine-tuning the proposed regimens for treating MDR-TB.

4. Efforts for tackling TB/HIV Co infection

TB/HIV is still a limited problem in Bangladesh though numbers are increasing and HIV is a growing concern. Little data are available about TB-HIV co-infection. A study carried out in Dhaka in 1999 showed 0.1% HIV sero-prevalence among smear-positive TB patients. A rising trend in HIV predicts an increase in TB cases attributable to HIV in the years ahead.

5. Challenges

- Strengthening laboratory network and improving EQA and supervision
- Increasing number and skills of staff
- Establishing effective coordination between NTP and NACP and developing national guidelines for collaborative TB/HIV activities
- Building infrastructure and technical capacity for culture and DST
- Overcoming access barriers such as costs and distance, and improving awareness of TB services
- Obtaining laboratory staff for additional laboratories
- Overcoming procurement and HR development barriers of HNPSP
- Coordinating large number of NGOs involved in delivery of health services
- Expanding DOTS services to military services and other public providers
- Expanding involvement of private practitioners in both rural and urban areas
- Ensuring sufficient coordination and quality control of non-NTP providers involvement in TB control.
- Establishing dialogue with different stakeholders, including policymakers, politicians, corporate and private sectors, to increase support and political commitment for TB control.

6. Planned activities:

- Implement HR development strategy, field-test TB management and training needs framework, and incorporate results into TB information system
- Established NRL for culture, DST and training, and expand EQA to cover all laboratories in the country

- Strengthen collaborative TB/HIV activities and develop national guidelines for collaborative TB/HIV activities
- Train HIV/AIDS NGOs in management and supervision of treatment of PLWHA with TB
- Develop protocol for DRS and setup pilot initiatives for management of MDR-TB cases
- Further decentralize peripheral laboratories and establish sputum collection outreach centre
- Strengthen collaboration with HNPSP for procurement of anti-TB drugs and HR development
- Finalize PPM-DOTS guidelines
- Involve local elites, social and religious leaders, schoolteachers, local media and parliamentarian in TB control
- Introduce comprehensive ACMS activities to increase demand for services for TB diagnosis

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; 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. Key indicators of TB are shown in Table 23.

Table 23
Key Indicators of TB in Bhutan

*Population	2116000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	107
Incidence (ss+/100000pop/yr)	48
Prevalence (all cases/100000pop)	184
Mortality (deaths/100000pop/yr)	20
Prevalence of HIV in adult TB patients (15-49yrs, %)	0.1
New TB cases Multi-drug-resistant (%)	-
Previously treated TB cases Multi-drug – resistant (%)	-
DOTS Coverage (2004)	100
Surveillance & DOTS implementation (2004)	
Notification rate (new and relapse/100000 pop/yr)	47
Notification rate (new ss+/100000/yr)	17
Case detection rate (all cases, %)	44
**Case detection rate (new ss, %)	35
DOTS notification rate (new and relapse/100000 pop/yr)	47
DOTS notification rate (new ss+100000pop/yr)	17
DOTS case detection rate (new and relapse, %)	44
**DOTS case detection rate (new ss +, %)	35
DOTS treatment success (2003 cohort, %)	90

Source: Global Tuberculosis Control-WHO Report 2006

*The population estimate used by the NTP Bhutan (0.80 million) differs from that of the United Nations Population Division (2.11 million). Using the smaller estimates gives a notification rate for new smear positive case of 45/100000 population, and a smear positive case detection rate of 92%.

Note: **When DOTS coverage is 100% and all patients are registered under DOTS, then case detection rate and DOTS detection rate could not be different.

2. DOTS Progress

In 1997 entire country was covered with DOTS services. Because of its hilly terrain, Bhutan has utilized a 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. The population estimate used by the NTP Bhutan (0.80 million) differs from that of the United Nations Population Division estimate for 2004 (2.11 million). Using the smaller estimates gives a notification rate for new smear positive case of 45 per 100000 population, and a smear positive case detection rate of 92% but WHO reported 35% smear positive case detection rate utilizing United Nations Population Division estimate for 2004 (2.11 million). Cure rates have been relatively low (79% for 2003 cohort) possibly because follow up smear examinations were not uniformly undertaken and reporting from the districts might be incomplete but treatment success rate of 2003 cohort is 90%. (Table 24, Figure 5 & 6)

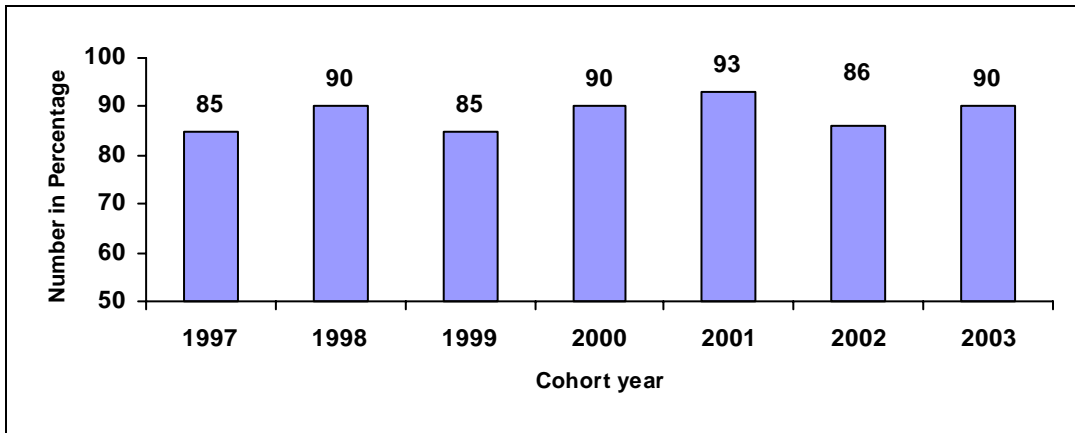
Table 24
DOTS Progress in Bhutan, 1995 - 2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
*DOTS Coverage (%)				100	100	100	100	100	100	100
DOTS case detection rate (new ss+,%)	29	25	24	23	27	31	33	34	34	35
DOTS treatment success (new ss+,%)	97	96	85	90	85	90	93	86	90	-

Source: Global Tuberculosis Control-WHO Report 2006

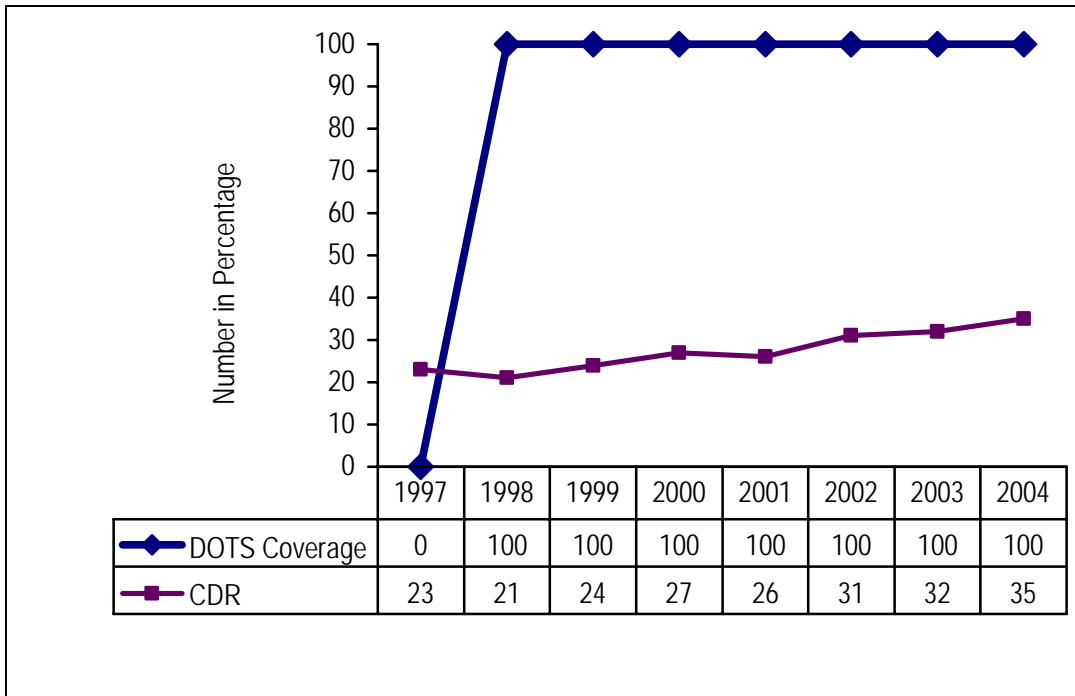
*Tuberculosis in the SAARC Region-an update 2005

Figure 15
Treatment Success Rates in Bhutan



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005

Figure 16
DOTS Coverage and Case Detection Rates in Bhutan



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005

Note: The population estimate used by the NTP Bhutan (0.80 million) differs from that of the United Nations Population Division estimate for 2004 (2.11 million). Using the smaller estimates gives a notification rate for new smear positive case of 45/100000 population, and a smear positive case detection rate of 92% but WHO reported 35% smear positive case detection rate utilizing United Nations Population Division estimate for 2004 (2.11 million).

3. Efforts for tackling MDR TB

MDR TB remains an area of concern for Bhutan. Although there are only few cases, all detected MDR TB cases receive specialist care at the national referral hospital.

4. Efforts for tackling TB/HIV Co infection

Although HIV/TB co- infection has been reported but there is no specific data for assessing the magnitude of the problem. Collaborative efforts between the TB and HIV Program have been undertaken.

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.

India

1. Status of Tuberculosis Control

India is the second most populated country in the world; the country is administratively divided into 35 states and union territories, which are sub-divided into over 600 districts. A mix of public and private health care providers provides health services, with private sector playing a very dominant role. According to WHO estimates, private health expenditure accounts for more than 80 percent of all health spending in India.

Between 1950 and 1960, landmark research studies conducted in the country shaped the ground for the development of TB control policies around the world. Based on these studies, the NTI in 1962 formulated the National TB Program, which was integrated with the general health care system of the country. A District TB Centre (DTC), which functioned as the nodal / referral centre for TB in the respective District was established in nearly all the districts. In 1992, the Government of India, together with the World Health Organization (WHO) and the Swedish International Development Agency (SIDA), reviewed the National TB Program. Based on the findings and recommendations of the 1992 review, the Government of India evolved a revised strategy and launched the Revised National TB Control Program (RNTCP) in the country.

India accounts for a third of the global burden of tuberculosis. Nearly 40% of the Indian population is already infected with the TB bacillus. Key indicators of TB are shown in Table 11.

Table 11
Key Indicators of TB in India
Global Rank by estimated number of cases, 2004 - 1

Population	1087124000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	168
Incidence (ss+/100000pop/yr)	75
Prevalence (all cases/100000pop)	312
Mortality (deaths/100000pop/yr)	30
Prevalence of HIV in adult TB patients (15-49yrs, %)	5.2
New TB cases Multi-drug-resistant (%)	2.4
Previously treated TB cases Multi-drug – resistant (%)	25
% of DOTS Coverage in 2004	84
Surveillance & DOTS implementation (2004)	
Notification rate (new and relapse/100000 pop/yr)	105
Notification rate (new ss+/100000/yr)	45
Case detection rate (all cases, %)	62
Case detection rate (new & relapse cases, %)	62
Case detection rate (new ss, %)	60
DOTS notification rate (new and relapse/100000 pop/yr)	97
DOTS notification rate (new ss+100000pop/yr)	43
DOTS case detection rate (new and relapse, %)	58
DOTS case detection rate (new ss +, %)	57
DOTS treatment success (2003 cohort, %)	86

Source: Global Tuberculosis Control-WHO Report 2006

2. DOTS Progress

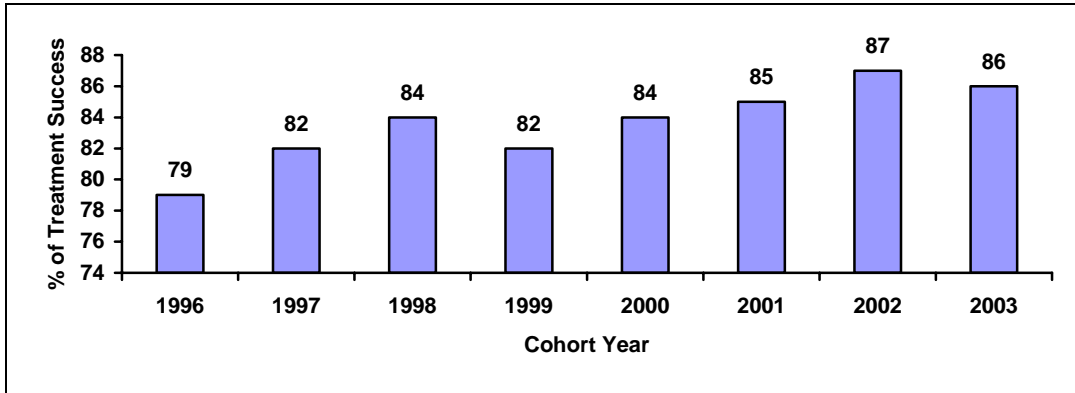
Through the Revised National Tuberculosis Control Program (RNTCP) introduced by the Government of India in 1997, DOTS expansion increased from 2% of the population in 1997 up to 84% in 2004 (from 778 million at the end of 2003 to 947 million by end 2004), making India the fastest DOTS expansion-country in the world and has planned to cover the whole country under DOTS by 2005. Consistently high treatment success rate under DOTS has been maintained and for 2003 cohort it was 86%. DOTS case detection rate of new ss+ is consistently improving from 0.3% in 1995 to 57% in 2004 (Table 12, Figure 3, & 4).

Table 12
DOTS Progress in India, 1995 - 2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
DOTS coverage (%)	1.5	2.0	2.3	9.0	14	30	45	52	67	84
DOTS notification rate (new & relapse/ 100000)	0.5	1.6	1.9	3.0	12	21	39	52	75	97
DOTS notification rate (new ss+/100000)	0.2	0.7	0.8	1.3	5.3	9.3	18	23	34	43
DOTS case detection rate (new & relapse %)	0.3	0.9	1.1	1.8	7.1	12	23	31	45	58
DOTS case detection rate (new ss+, %)	0.3	0.9	1.1	1.7	7.0	12	24	31	45	57
Case detection rate (new ss+) within DOTS area (%)	19	44	46	19	52	41	53	60	69	72
DOTS treatment success (new ss+, %)	79	79	82	84	82	84	85	87	86	-----
DOTS re-treatment success (ss+, %)	70	67	65	72	69	71	69	72	70	-----

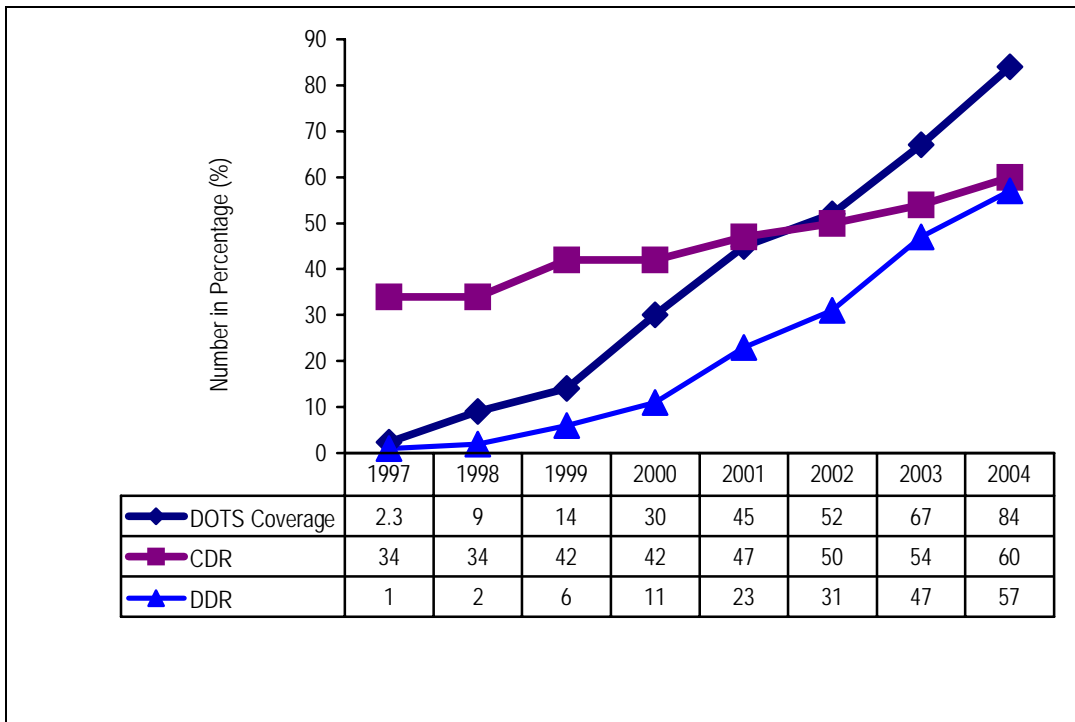
Source: Global Tuberculosis Control-WHO Report 2006

Figure 3
Treatment success rates of New Sputum Smear Positive in India



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005

Figure 4
DOTS Coverage and Case Detection Rates of New Sputum Smear Positive in India



Source: Tuberculosis in the SAARC Region-an update 2005
Global Tuberculosis Control-WHO Report 2006 (2004 data)
Note: there is minor variation in DDR calculated by STC and WHO

According to country report (TB India 2005, RNTCP Status Report), new smear positive case detection in DOTS area has increased from 69% in 2003 to >72% in 2004.

3. Efforts for tackling MDR TB

In India, drug resistance patterns vary widely across different parts of the country. Data published by TRC, Chennai has shown a gradual rise in the prevalence of resistance in 'new' cases for the past four decades, for isoniazid (3% to 17%) and for streptomycin (3% to 13%). Drug resistance to rifampicin started appearing in 1990s. Data from recent studies conducted by TRC and NTI, have found MDR-TB levels in India is between 0.5% to 3% in new cases and 12% in re-treatment cases.

RNTCP is moving gradually towards the provision of accurate and reliable drug sensitivity testing (DST) facilities and treatment services for MDR-TB patients. A total of 24 DOTS Plus sites are being planned across the country over the next five years, with a view to have in place RNTCP DOTS Plus services that are capable of enrolling on treatment at least 5000 "new" MDR-TB patients every year by 2010.

4. Efforts for tackling TB/HIV Co infection

National AIDS Control Organization (NACO) and RNTCP have devised a Joint Action Plan for TB-HIV coordination. The basic purpose of the Joint action plan is to ensure optimum synergy between the two national program for effective prevention and control of both the diseases.

The initial Phase of the Coordination, which was launched in 2001, was initiated in the six high HIV prevalence states, namely-Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra, Nagaland & Manipur. In 2003 the co-ordination was extended to eight additional states namely Delhi, Gujarat, Himachal Pradesh, Kerala, Orissa, Punjab, Rajasthan and West Bengal. The immediate priority of the coordination activities is to consolidate and train the key staff of both the program in these 14 States and firmly establish VCTC-RNTCP cross-referral mechanism. The coordination shall be extended to the other states in the entire country in due course.

The areas of the TB-HIV co-ordination focus on Sensitization of key policy makers to address the importance of TB-HIV co-ordination, co-ordination of service delivery and cross referrals, a Joint Training program for service providers involved in RNTCP and NACP, VCTC-RNTCP Co-ordination, optimal and comprehensive use of the community outreach of both program through the sensitization and involvement of NGOs, CBOs and Private Practitioners involved in both program, use of Universal precautions to prevent the spread of TB in facilities caring for HIV infected persons, and to prevent the spread of HIV through safe injection practices in the RNTCP, Joint efforts at IEC, Monitoring and Evaluation system at District, State and National levels to assess the co-ordination & Treatment services for People living with HIV/AIDS.

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 in 14 states with high or intermediate HIV prevalence
- 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

Maldives

1. Status of Tuberculosis Control

The health system in the Maldives has an inclination towards a totally integrated system where most of the financing, provision and stewardship is the responsibility of Government. However, the public integrated system is supplemented by private clinics and hospitals. The system is further complemented by different NGOs participating in public health programs, pharmaceuticals and traditional medicine system.

The public sector operates a centralized hierarchical system. The system is organized into five tiers comprising of the central, Regional, atoll, sub-atoll and islands level services, arranged to follow a referral pathway. However patients are neither required nor do they follow this pathway and can enter the system at any point.

Tuberculosis from centuries has been recognized as one of Maldives' major killer diseases. Government recognized TB as a serious public health problem in 1960 and first TB clinic was established in 1962. BCG vaccination program was initiated in 1972 and in 1994 DOTS was adopted. Key indicators of TB are shown in Table 25.

Table 25
Key Indicators of TB in Maldives

Population	321000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	49
Incidence (ss+/100000pop/yr)	22
Prevalence (all cases/100000pop)	57
Mortality (deaths/100000pop/yr)	4
Prevalence of HIV in adult TB patients (15-49yrs, %)	0.3
New TB cases Multi-drug-resistant (%)	0
Previously treated TB cases Multi-drug – resistant (%)	1
% of DOTS Coverage (2004)	100
Surveillance & DOTS implementation (2004)	
Notification rate (new and relapse/100000 pop/yr)	37
Notification rate (new ss+/100000/yr)	21
Case detection rate (new & relapse, %)	76
Case detection rate (new ss, %)	94
DOTS notification rate (new and relapse/100000 pop/yr)	37
DOTS notification rate (new ss+100000pop/yr)	21
DOTS case detection rate (new and relapse, %)	76
DOTS case detection rate (new ss +, %)	94
DOTS treatment success (2003 cohort, %)	91

Source: Global Tuberculosis Control-WHO Report 2006

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. Treatment success rate has been sustained at around 90%, and for 2003 cohort it was 91%. The case detection target was reached in 1996 and the case detection rate of new ss+ cases was 94% in 2004. Till 2003 no case of drug resistance has been reported. One MDR TB case was reported in 2004. (Table 26 and Figure 17 & 18)

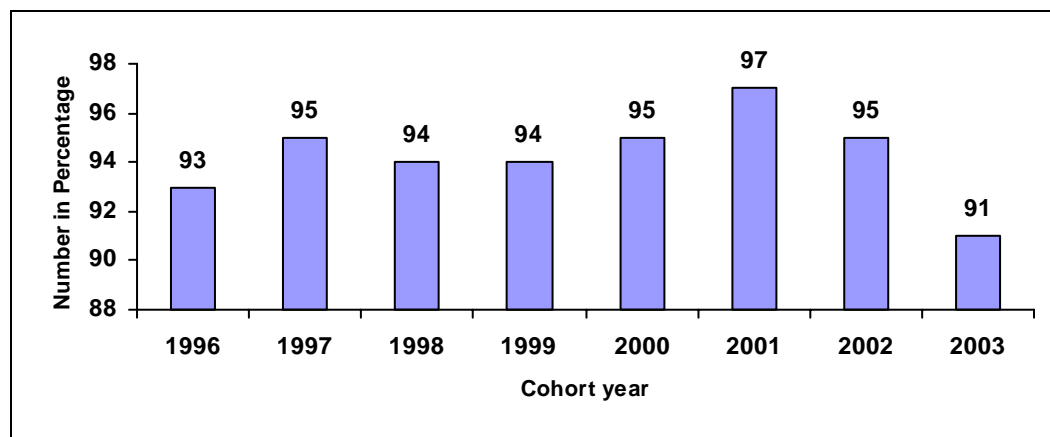
Table 26
DOTS Progress in Maldives

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
*DOTS Coverage (%)				100	100	100	100	100	100	100
DOTS case detection rate (new ss+,%)	101	99	93	91	96	74	71	76	91	94
DOTS treatment success (new ss+,%)	97	93	94	94	94	97	97	95	91	

Source: Global Tuberculosis Control-WHO Report 2006

*Tuberculosis in the SAARC Region-an update 2005

Figure 17
Treatment Success Rates of New Sputum Smear Positive in Maldives

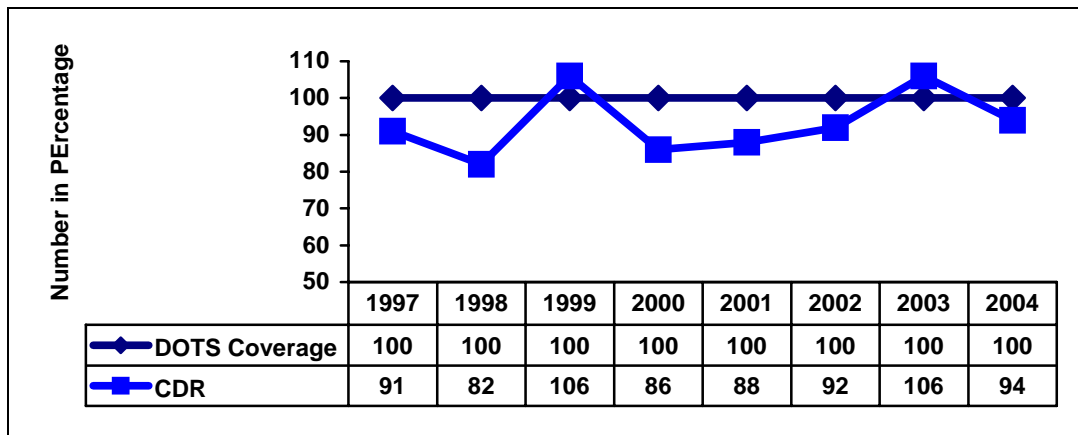


Source: Global Tuberculosis Control-WHO Report 2006

Tuberculosis in the SAARC Region-an update 2005

Note: There is minor variation in treatment success rate calculated by STC & WHO

Figure 18
DOTS Coverage and Case Detection Rates of New Sputum Smear Positive in Maldives



Source: Tuberculosis in the SAARC Region-an update 2005

Global Tuberculosis Control-WHO Report 2006 (for 2004 data)

Note: When population coverage is 100% and all the patients are registered under DOTS, then CDR and DDR are equal

3. Efforts for tackling MDR-TB

A total of 6 MDR – TB cases have been recorded since 1995. Culture facility is available at Indira Gandhi Memorial Hospital (IGMH). For Drug Susceptibility Testing (DST) samples are sent abroad.

4. Efforts for tackling TB/HIV Co infection

Regular HIV surveillance is being undertaken in the country among TB patients.

5. Challenge

- Sustain TB control activities

6. Planned Activities

- Development of infrastructure and human resource for intensified case finding & early case detection
- Strengthening of microscopy network to improve access to diagnostic services
- Social mobilization for increased community involvement and utilization of available services.

Nepal

1. Status of Tuberculosis Control

The Ministry of Health is responsible for the support and administration of public health services including hospitals and health clinics TB remains one of the major public health problems in Nepal. Various steps have been taken to deal TB since 1934. In 1934, 50-bedded TB Sanatorium was established at Tokha in Kathmandu subsequently in 1953 Nepal Anti TB Association (NATA) established Chest Hospital at Kalimati. In 1965 TB control project started & in 1966 BCG campaign began. Active case finding program by sputum microscopy started in 1975, replaced with passive case finding in 1979. National TB Centre and Regional TB Centre developed by Govt. of Japan started their activities in 1988. In 1995 Nepal adopted DOTS strategy. Key indicators of TB are shown in Table 17.

Table 17
Key Indicators of TB in Nepal

Population	26591000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	184
Incidence (ss+/100000pop/yr)	82
Prevalence (all cases/100000pop)	257
Mortality (deaths/100000pop/yr)	24
Prevalence of HIV in adult TB patients (15-49yrs, %)	3.2
New TB cases Multi-drug-resistant (%)	-
Previously treated TB cases Multi-drug – resistant (%)	-
% of DOTS Coverage in 2004	100
Surveillance & DOTS implementation in 2004	
Notification rate (new and relapse/100000 pop/yr)	120
Notification rate (new ss+/100000/yr)	55
Case detection rate (new & relapse, %)	65
Case detection rate (new ss, %)	67
DOTS notification rate (new and relapse/100000 pop/yr)	120
DOTS notification rate (new ss+100000pop/yr)	55
DOTS case detection rate (new and relapse, %)	65
DOTS case detection rate (new ss +, %)	67
DOTS treatment success (2003 cohort, %)	87

Source: Global Tuberculosis Control-WHO Report 2006

Note: When DOTS coverage is 100% and all patients are registered under DOTS, then case detection rate and DOTS detection rate could not be different.

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. DOTS is now (July 2005) running through the integrated general health services in 462 treatment centres and 2482 sub centres throughout the country. Now almost all diagnosed TB patients are getting treatment under DOTS strategy with more than 85% treatment success rate. The high treatment success rate of new smear positive cases has been sustained from the very beginning. (Table 18 and Figure 9,10 & 11)

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.

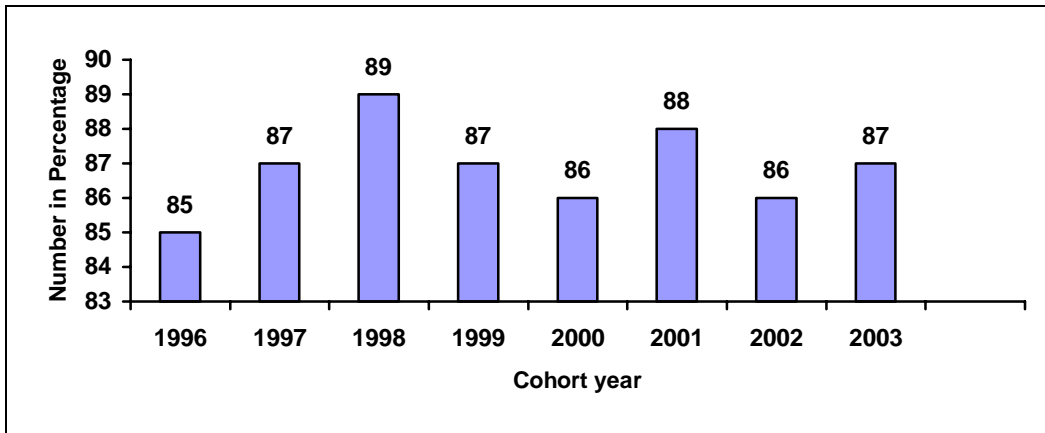
Table 18
DOTS Progress in Nepal

	1996	1997	1998	1999	2000	2001	2002	2003	2004
*DOTS Coverage (%)	1.7	17	17	75	84	84	89	94	100
DOTS case detection rates (new ss+,%)	5	11	16	44	57	58	61	66	67
DOTS treatment success (new ss+,%)	85	87	89	87	86	88	86	87	-----

Source: Global Tuberculosis Control-WHO Report 2006

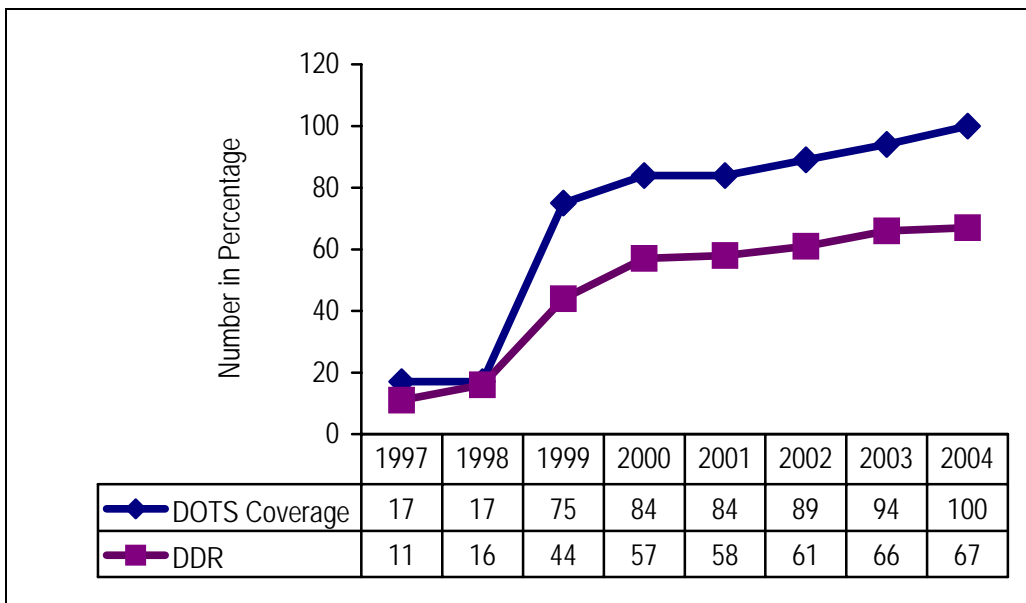
*Tuberculosis in the SAARC Region-an update 2005

Figure 9
Treatment success rate of New Sputum Smear Positive in Nepal



Source: Global Tuberculosis Control-WHO Report 2006

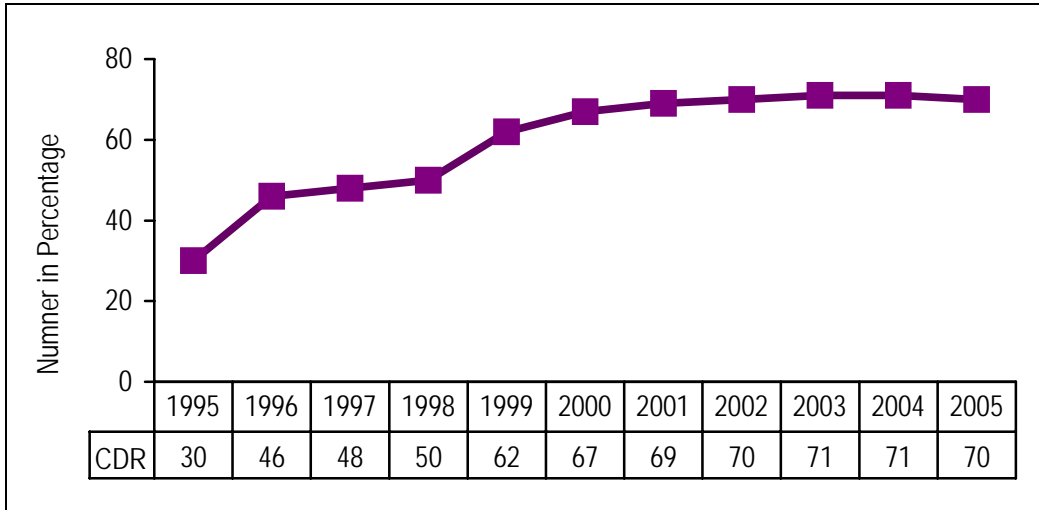
Figure 10
DOTS Coverage and DOTS Case Detection Rates of New Sputum Smear Positive



Source: Global Tuberculosis Control-WHO Report 2006

According to country Annual Report 2004/2005 (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. The program has achieved the TB control targets of case detection and treatment success; as of July 2005 the case detection rate was 70%. The treatment success rate for the previous year (2003/2004) was 88%.

Figure 11
Trends in Case Detection Rate in Nepal



Source: Annual Report NTP Nepal 2004/2005 (Nepali Year 2061/2062)

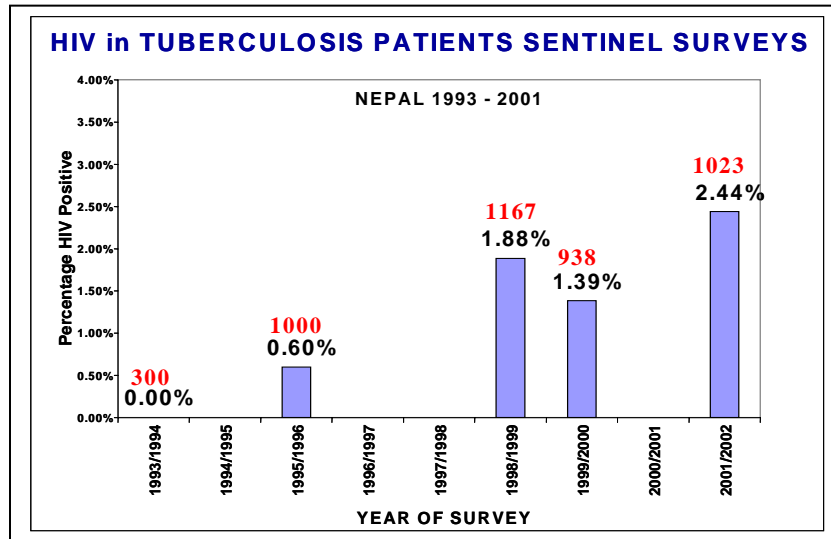
3. Efforts for tackling MDR TB

The NTP has carried out repeated surveys on drug resistance. The primary MDR was 1.20% in survey carried out in 1996/97, 3.60% in 1998/99 and 1.30% in 2001/02. NTP surveys have shown around 9 out of 10 Chronic TB patients have MDR TB. NTP's Pilot Program for management of MDR TB (DOTS plus) in all five Regions at selected sites has begun in 2005. Under this around 350 MDR TB patients will be managed within two years time.

4. Efforts for tackling TB/HIV Co infection

The prevalence of HIV in Nepal as of 2004 was 0.5%. Number of reported cases of HIV over years has increased. The sentinel surveys of HIV in TB patients carried out between 1993-2002 is shown figure 12

Figure 12
Sentinel surveys of HIV in TB patients carried out in Nepal, 1993-2002



Source: History of TB Control Program in the SAARC Region (First edition 2005)

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

Pakistan

1. Status of Tuberculosis Control

Pakistan has a disease burden pattern, which is typical of developing countries. The communicable diseases are one of the main health problems; Tuberculosis is one of them. It remains one of the major public health problems in Pakistan ever since its formation. Tuberculosis Control & Prevention activities were started in 1949, with mass BCG vaccination campaign. In 1959 a plan of operation was prepared to conduct first ever prevalence survey in Pakistan, which was carried out in 1960-61. The results of the survey paved the collaborative effort between MOH, WHO and UNICEF for a twenty year Perceptive Plan of National Tuberculosis Control prepared in 1965, that focused on establishing specialized TB Centres and special TB Wards at hospitals with integration of rural health facilities. Due to withdrawal of WHO and UNICEF support in 1982 led to stalling of program for almost two decades.

The National TB Control Program (NTP) Pakistan adopted the DOTS (Directly Observed Treatment, Short course) 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 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. Key indicators of TB are shown in Table 15.

Table 15
Key Indicators of TB in Pakistan
Global Rank by estimated number of cases in 2004 - 7

Population	154794000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	181
Incidence (ss+/100000pop/yr)	81
Prevalence (all cases/100000pop)	329
Mortality (deaths/100000pop/yr)	40
Prevalence of HIV in adult TB patients (15-49yrs, %)	0.6
New TB cases Multi-drug-resistant (%)	2.0
Previously treated TB cases Multi-drug – resistant (%)	26
% of DOTS Coverage in 2004	79
Surveillance & DOTS implementation (2004)	
Notification rate (new and relapse/100000 pop/yr)	66
Notification rate (new ss+/100000/yr)	22
Case detection rate (all cases, %)	36
Case detection rate (new & relapse, %)	36
Case detection rate (new ss, %)	27
DOTS notification rate (new and relapse/100000 pop/yr)	66
DOTS notification rate (new ss+100000pop/yr)	22
DOTS case detection rate (new and relapse, %)	36
DOTS case detection rate (new ss +, %)	27
DOTS treatment success (2003 cohort, %)	75

Source: Global Tuberculosis Control-WHO Report 2006

2. DOTS Progress

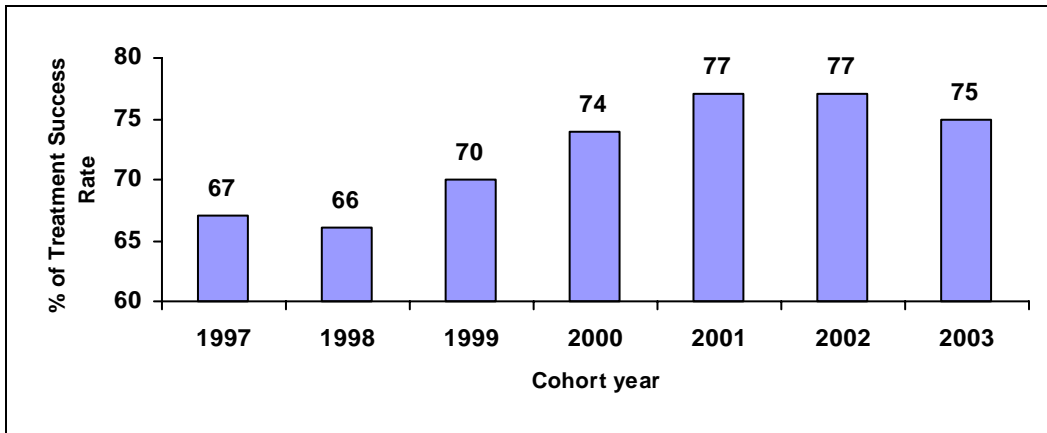
Pakistan adopted the DOTS strategy in 1995 and started DOTS demonstration activities in some areas. DOTS coverage has increased rapidly since 2000, reaching 79% in 2004.¹ DOTS is continuing to expand, and the overall TB control system is steadily improving. The NTP has a strategic plan for DOTS expansion for 2001-2005, with target of nationwide DOTS coverage by end of 2005. The smear positive case detection rate under DOTS is increasing; it was 2.8% in 2000 and reached 27% in 2003. The treatment success rate under DOTS is also increasing, from 67% in 1997 and reached 75% in 2003. The main reason for the low treatment success is high default rate. 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 the National TB Program (NTP) has continued to make good progress. (Table 16, Figure 7, & 8)

Table 16
DOTS Progress in Pakistan

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
DOTS coverage (%)	2.0	8.0	-	8.0	8.0	9.0	24	45	63	79
DOTS notification rate (new & relapse/100 000)	2.8	3.3	-	7.0	3.3	7.7	12	32	46	66
DOTS notification rate (new ss+/100 000)	0.8	1.4	-	3.0	1.6	2.3	4.3	10	14	22
DOTS case detection rate (new & relapse/%)	1.5	1.8	-	3.9	1.8	4.3	6.6	18	25	36
DOTS case detection rate (new ss+, %)	1.0	1.8	-	3.7	2.0	2.8	5.3	13	17	27
DOTS Case detection rate (new ss+) coverage (%)	51	22	-	47	25	31	22	28	27	34
DOTS treatment success (new ss+, %)	70	-	67	66	70	74	77	77	75	-
DOTS re-treatment success (ss+, %)	70	-	57	92	75	54	-	76	65	-

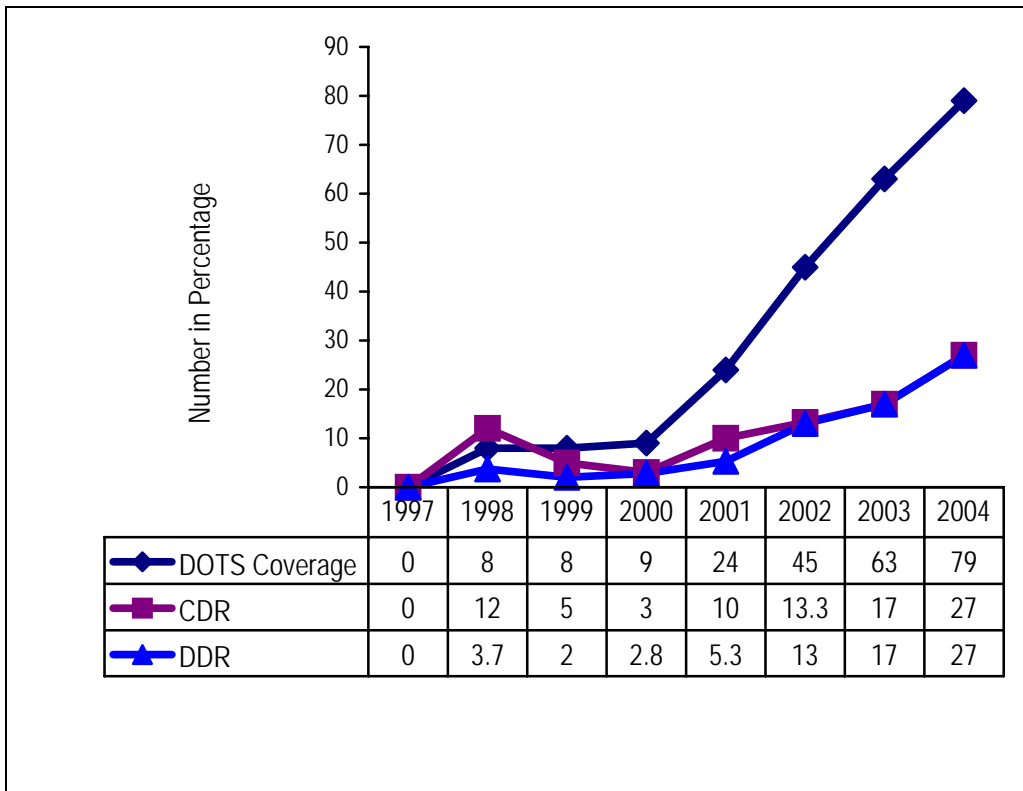
Source: Global Tuberculosis Control-WHO Report 2006

Figure 7
Treatment success rate of New Sputum Smear Positive in Pakistan



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005

Figure 8
DOTS Coverage and Case Detection Rates in Pakistan



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005 (data for CDR)

3. Efforts for tackling MDR TB

NTP has conducted Multi-centric Study on drug resistance in 2005

4. Efforts for tackling TB/HIV co infection

At some places study on HIV prevalence among TB patients has been conducted

5. Challenges

- Increasing supervision capacity at district level
- Improving HR capacity and developing incentive schemes to motivate health-care workers involved in TB control
- Establishing a fully functional TB laboratory network in each province, including reference laboratories
- Strengthening peripheral-level laboratories and improving supervisory capacity of intermediate-level laboratories
- Improving the quality of diagnosis by increasing bacteriological confirmation for TB cases
- Establishing national policy on culture and DST
- Continuing TB control activities in the earthquake-affected areas at the same level as before the earthquake.
- Establishing formal TB/HIV coordinating body and national strategy for collaborative TB/HIV activities in cooperation with NACP
- Setting up surveillance system to monitor HIV prevalence in TB patients
- Determining the extent of anti-TB drug resistance
- Establishing a routine information system on chronic TB patients within NTP services
- Joint supervision and implementation of TB, HIV and Malaria programs in districts.
- Improving the role of the private sector and tertiary care hospital in TB diagnosis and treatment under DOTS services.
- Building managerial and supervision capacity at district and peripheral levels
- Strengthening district health teams
- Ensuring that health and TB control remain a priority for district political leaders during the decentralization process
- Developing national legislation specifically addressing drug procurement, and acquiring drug management technical expertise and capacity
- Improving the role of private sector and tertiary care hospital in TB diagnosis and treatment under DOTS services
- Involving communities and non-health sectors such as ministries of defense, interior, Labor, water and power in TB control
- Developing PPM-DOTS policy guidelines
- Increasing coverage of LHW program and improving support and incentives for LHWs
- Improving skills of existing communication staff
- Improving coordination of and securing funds for ACSM activities
- Increasing community ownership, awareness and knowledge about TB control and DOTS services.

6. Planned activities

- Engage district leaders and authorities to improve political commitment for TB control
- Further strengthen monitoring and supervision activities
- Strengthen intermediate laboratories
- Implement EQA
- Expand diagnostic services within the public network for poor and remote populations
- Integrate DOTS services into efforts to rehabilitate health services in earthquake affected Region
- Contribute to improve and expand the primary health care network
- Develop public-public and private-public initiatives
- Conduct operational research on the effect of DOTS implementation on health system development
- Document current PPM-DOTS activities to form plans for further scale up
- Continue to develop and expand STOP TB Pakistan National Partnership
- Expand community involvement

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Sri Lanka

1. Status of Tuberculosis Control

The policy of Govt. of Sri Lanka is to provide free health services to every citizen. TB control activities in Sri Lanka were initiated in 1910. The first Chest Clinic was established in Colombo in 1916. Anti TB campaign was introduced as a vertical program in 1945 through several chest hospitals and a network of 9 provincial chest clinics. Health Authorities made Pulmonary TB as a notifiable disease in 1956. BCG vaccination was introduced in 1955 and incorporated in Expanded Program of Immunization in 1978. TB control activities were integrated into the general health services in 1970. Program reverted to vertical approach based at chest clinics in 1980s. Anti TB campaign was renamed as the Respiratory Diseases Control Program in 1989. Sri Lanka adopted directly observed treatment-short course (DOTS) strategy in 1994. Key indicators of TB are shown in Table 19.

Table 19
Key Indicators of TB in Sri Lanka

Population	20570000
TB Burden (2004 estimates)	
Incidence (all cases/100000 pop/yr)	60
Incidence (ss+/100000pop/yr)	27
Prevalence (all cases/100000pop)	91
Mortality (deaths/100000pop/yr)	9
Prevalence of HIV in adult TB patients (15-49yrs, %)	0.4
New TB cases Multi-drug-resistant (%)	-
Previously treated TB cases Multi-drug – resistant (%)	-
% of DOTS Coverage in 2004	88
Surveillance & DOTS implementation (2004)	
Notification rate (new and relapse/100000 pop/yr)	42
Notification rate (new ss+/100000/yr)	21
Case detection rate (new & relapse, %)	69
Case detection rate (new ss+, %)	77
DOTS notification rate (new and relapse/100000 pop/yr)	37
DOTS notification rate (new ss+100000pop/yr)	19
DOTS case detection rate (new and relapse, %)	61
DOTS case detection rate (new ss +, %)	70
DOTS treatment success new ss+ (2003 cohort, %)	81

Source: Global Tuberculosis Control-WHO Report 2006

2. DOTS Progress

After adoption of DOTS strategy in 1994 Sri-Lanka has made considerable progress with DOTS expansion. DOTS has been made available to over 97% of the population by 2004 (according to NPTCCD). The National Program for Tuberculosis Control and Chest Diseases (NPTCCD) is a decentralized unit headed by the Director and functions under the Deputy Director General Public Health Services since 2001.

The NPTCCD carries its function through a network of District Chest Clinics, Branch Chest Clinics, Chest Hospitals and Chest wards in close coordination with the general health services giving high priority for TB control activities.

DOTS case detection rate of new smear positive cases in 2004 was 70%. The treatment success rate reported for smear-positive cases notified in DOTS areas in 2001 was 80% and it has increased by 1% for the cases registered in 2002 and remain same in 2003. and DOTS Coverage is 88%. (Table 20 and Figure 13 & 14). DOTS coverage (%) trend of Sri Lanka according to WHO global report and according to information presented by NTP Director of Sri Lanka at Regional Managers' meeting, 9-11 Feb 2005 at New Delhi, India is given in table 21.

Table 20
DOTS Progress in Sri Lanka, 1995 - 2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
*DOTS Coverage (%)			94	95	95	64	64	73	74	100
DOTS case detection rate (new ss+,%)	59	57	67	71	70	63	68	66	66	70
DOTS treatment success (new ss+,%)	79	80	76	76	84	77	80	81	81	-

Source: Global Tuberculosis Control-WHO Report 2006

*Tuberculosis in the SAARC Region-an update 2005

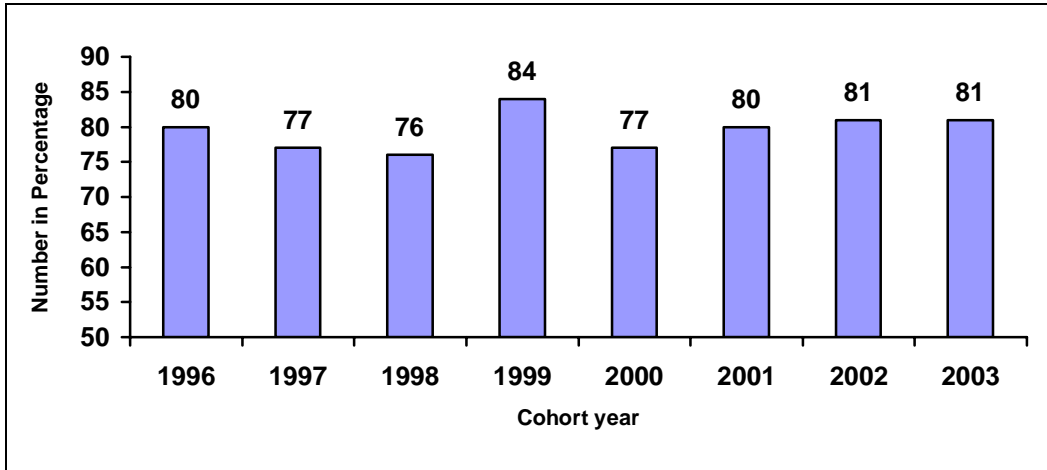
Table 21
DOTS Coverage in Sri Lanka

Source	1997	1998	1999	2000	2001	2002	2003	2004
WHO Report	94	95	95	95	64	73	74	88
NTP, Sri Lanka	5.2	11.97	25.39	54.3	74.73	74.73	80.65	97.61

Source: Global Tuberculosis Control-WHO Report 2006

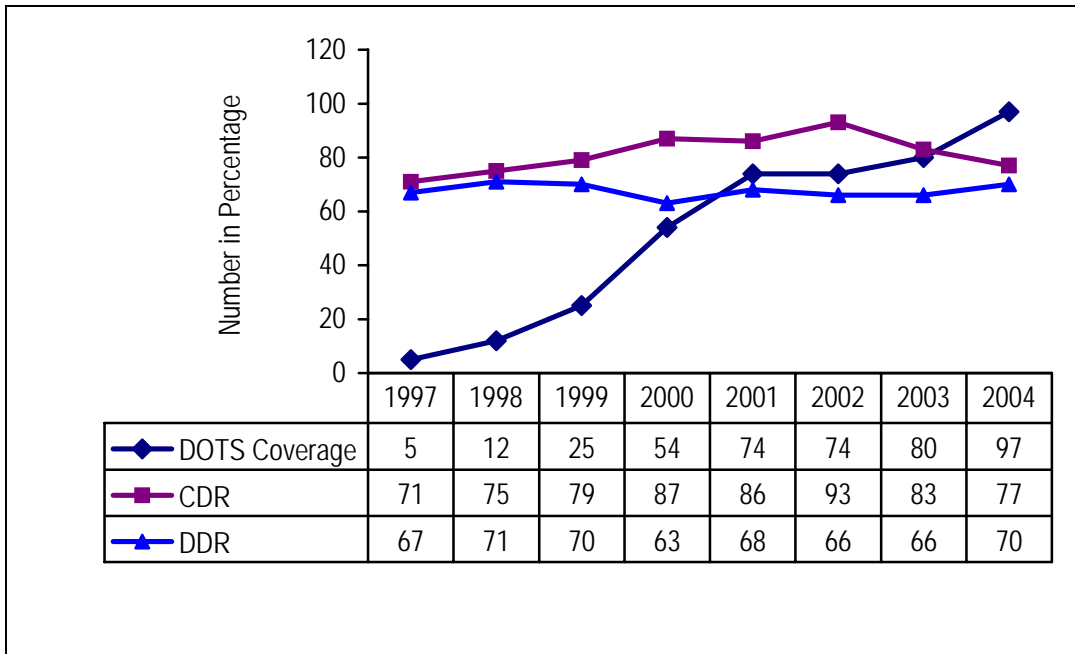
Presentation by NTP Director of Sri Lanka at Regional Managers' Meeting 2004, 9-11 Feb 2005 at New Delhi, India

Figure 13
Treatment Success Rates in Sri Lanka



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005

Figure 14
DOTS Coverage DOTS Case Detection Rates in Sri Lanka



Source: Global Tuberculosis Control-WHO Report 2006
Tuberculosis in the SAARC Region-an update 2005 (CDR)
Note: DOTS coverage according to country report and DOTS Case Detection rates according to Global TB Report

(Presentation by NTP Director of Sri Lanka at Regional Managers' Meeting 2004, 9-11 Feb 2005 in New Delhi, India)

3. Efforts for tackling MDR TB

The extent of Multi-drug-resistant TB in the country is not known. While the current treatment success rate under DOTS is fairly high, the outcome of cases managed outside National TB Control Program is unknown. In 2004, 8 patients with MDR-TB (one new and seven previously treated) have been detected. Currently the sputum cultures are done only at the National Reference Laboratory and are recommended in the following situations: 1) Pre-treatment cultures in Category 1 patients who have a high risk of drug resistance like health care workers, prisoners, HIV positive patients, drug addicts and contacts of known drug resistant TB patients, 2) Pre-treatment cultures in all category 2 patients, 3) Pre-treatment cultures in sputum smear negative PTB patients, and 4) Sputum smear positive patients who fail to convert at the end of two months of Category I treatment. The patients in the intensive phase of MDR treatment are admitted to the Chest Hospital at Welisara. The treatment in the continuation phase is given from the district chest clinics. Regular sputum cultures are done once in every 2 months. Drug Resistance Surveillance is currently being done.

4. Efforts for tackling TB/HIV Co infection

Tuberculosis patients have been included in the annual sentinel surveillance for HIV since 1993. (Table 26)

Table 22
Results of sentinel surveys of HIV in TB patients in Sri Lanka, 1993 - 2004

	'93	'94	'95	'96	'97	'98	'99	2000	2001	2002	2003	2004
No. of Tested	634	420	537	549	628	500	832	1111	889	1724	1566	1656
No. of Positive	2	0	0	0	0	0	0	0	1	0	1	0

Source: History of Tuberculosis Control Program in the SAARC Region (First Edition 2005)

5. Challenges

- Improvement in infrastructure,
- Increasing number and skills of staff
- Strengthening laboratory network and improving EQA
- Strengthening supervision
- Enhancing DOTS services
- Managing MDR TB
- Involving other sector in TB control
- Improving coordination between central and provincial level

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"

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Goals, Target and indicators for TB Control

Millennium Development Goal

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

Target 8 Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Indicator 2 Prevalence and death rates associated with tuberculosis

Indicator 24 Proportion of tuberculosis cases detected and cured under DOTS (the internationally recommended strategy for TB Control)

Stop TB Partnership Targets

By 2005 At least 70% of people with sputum smear positive TB will be diagnosed (i.e. under the DOTS strategy), and at least 85% cured. These are targets set by the World Health Assembly of WHO.

By 2015 The global burden of TB (prevalence and death rates) will be reduced by 50% relative to 1990 levels. This means reducing prevalence to 150 per 100000 or lower and deaths to 15 per 100000 per year or lower by 2015 (including TB cases co infected with HIV) . The number of people dying from TB in 2015 should be less than approximately 1 million, including those infected with HIV.

By 2050 The Global incidence of TB disease will be less than or equal to 1 case per million population per year.

The Stop TB Strategy

<p>Vision: A World free of TB</p>
<p>Goal: To dramatically reduce the global burden of TB by 2015 in line with the Millennium Development Goals and the Stop TB Partnership targets.</p>
<p>Objectives: Achieve universal access to high quality-diagnosis and patient centered treatment Reduce the human suffering and socioeconomic burden associated with TB. Protect poor and vulnerable populations from TB, TB/HIV and MDR-TB. Support development of new tools and enable their timely and effective use.</p>
<p>Targets: MDG 6, Target 8: Halt and begin to reverse the incidence of TB by 2015.</p> <p>Targets linked to the MGDs and endorsed by the stop TB Partnership: By 2005: detect at least 70% of infectious TB cases and cure at least 85% of these cases By 2015: reduce TB prevalence and deaths rates by 50% relative to 1990 By 2050: eliminate TB as a public health problem (≤ 1 case per million population)</p>
<p>Components of the strategy and implementation approaches</p> <ol style="list-style-type: none"> 1. Pursuing high- quality DOTS expansion and enhancement <ul style="list-style-type: none"> • Political commitment with increased and sustained financing • Case detection through quality assured bacteriology • Standardized treatment with supervision and patient support • An effective drug supply and management system • Monitoring and evaluation system, and impact measurement 2. Addressing TB /HIV, MDR-TB and other challenges <ul style="list-style-type: none"> • Implement collaborative TB/HIV activities • Prevent and control MDR-TB • Address prisoners, refugees, other high-risk groups and special situations. 3. Contributing to health system strengthening <ul style="list-style-type: none"> • Actively participate in efforts to improve system wide policy, human resource, financing, management, service, delivery and information systems • Share innovations that strengthen health systems, including the Practical Approach to Lung Health (PAL) • Adapt innovations from other fields 4. Engaging all care providers <ul style="list-style-type: none"> • Public-Public and Public-Private Mix (PPM) approaches • Implement International Standards for Tuberculosis Care 5. Empowering People with TB, and communities <ul style="list-style-type: none"> • Advocacy, communication and social mobilization • Community participation in TB care • Patients' Character for Tuberculosis care 6. Enabling and promoting research <ul style="list-style-type: none"> • Programme- based operational research • Research to develop new diagnostics, drugs and vaccines.

Technical elements of the DOTS strategy

<p>Case detection through quality-assured bacteriology Case detection among symptomatic patients self-reporting to health services, using sputum smear microscopy. Sputum culture is also used for diagnosis in some countries, but direct sputum smear microscopy should still be performed for all suspected cases.</p>
<p>Standardized treatment with supervision and patient support Standardized short course chemotherapy using regimens of 6-8 months for at least all confirmed smear-positive cases. Good case management includes directly observed treatment (DOT) during the intensive phase for all new smear-positive cases, during the continuation phase of regimens containing Rifampicin and drug the entirety of a re-treatment regimen. In countries that have consistently documented high rate of treatment success, DOT may be reserved for a subset of patients, as long as cohort analysis of treatment results is provided to document the outcome of all cases.</p>
<p>An effective drug supplied management system Establishment and maintenance of a system to supply all essential anti- TB drugs and to ensure no interruption in their availability.</p>
<p>Monitoring and evaluation system and impact measurement Establishment and maintenance of a standardized recording and reporting system, allowing assessment of treatment results.</p>

Definitions of tuberculosis cases

Case of Tuberculosis	A patients in whom tuberculosis has been confirmed by bacteriology or diagnosed by a clinician
Definite case	A patient with positive culture for the Mycobacterium tuberculosis complex. In countries where culture is not routinely available, a patient with 2 sputum smears positive for acid-fast bacilli (AFB+) is also considered a definite case.
Pulmonary case	A Patient with TB disease involving the lung parenchyma.
Smear-positive pulmonary case	A Patient with at least 2 initial sputum smear examinations (direct smear microscopy) AFB+; or one sputum specimen AFB+ & radiographic abnormalities consistent with active pulmonary tuberculosis as determined by a clinician; or one sputum specimen AFB+ and culture positive for M Tuberculosis.
Smear-negative pulmonary case	A patient with pulmonary tuberculosis not meeting the above criteria for smear-positive disease. Diagnostic criteria should include: at least 3 sputum smear examinations negative for AFB; and radiographic abnormalities consistent with active pulmonary TB; and no response to a course of broad spectrum antibiotics; and decision by a clinician to treat with a full course of anti-TB therapy; or positive culture but negative AFB sputum examinations.
Extra pulmonary case	A patient with tuberculosis of organs other than the lungs (e.g. pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges). Diagnosis should be based on one culture positive specimen, or histological or strong clinical evidence consistent with active extra pulmonary disease, followed by a decision by a clinician to treat with a full course of anti TB chemotherapy. Note: a patient in whom both pulmonary and extra pulmonary tuberculosis has been diagnosed should be classified as a pulmonary case.
New case	A patient who has never had treatment for tuberculosis or who has taken anti-TB drugs for less than 1 month.
Relapse case	A patient previously declared cured but with a new episode of bacteriologically positive (sputum smear or culture) tuberculosis
Re- treatment case	A patient previously treated for tuberculosis, undergoing treatment for a new episode of bacteriological–positive tuberculosis.

Definitions of treatment outcomes
(Expressed as a percentage of the number registered in the cohort)

Cured	An initially smear-positive patient who was smear-negative in the last month of treatment and on at least one previous occasion.
Completed treatment	A patient who completed treatment but did not meet the criteria for cure or failure
Died	A patient who died from any cause during the treatment.
Failed	A smear-positive patient who remained smear-positive at months 5 or later during treatment
Defaulted	A patient whose treatment was interrupted for 2 consecutive months or more
Transferred out	A patient who transferred to another reporting unit and whose treatment outcome is not known.
Successfully treated	A patient who was cured and who completed treatment
Cohort	A group of patients in whom TB has been diagnosed, and who were registered for treatment during a specified time period (e.g. the cohort of new smear positive cases registered in the calendar year 2003). This group forms the denominator for calculating treatment outcomes. The sum of the above treatment outcome, plus any cases for which no outcome is recorded (e.g. still on treatment) should equal the number of cases registered.