TB INDIA 2008

RNTCP Status Report

सत्यमेव जयते

Central TB Division
Directorate General of Health Services
Ministry of Health and Family Welfare
Nirman Bhawan, New Delhi - 110011
http://www.tbcindia.org

I am Stopping TB

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Minister of Health & Family Welfare
Government of India
Nirman Bhawan, New Delhi - 110011

डॉ अन्बुमणी रामदास
Dr. Anbumani Ramadoss

FOREWORD

I am happy that the TB India (2008) Annual Report is being brought out for the eighth time. The Revised National Tuberculosis Control Programme has now completed over nine years of its implementation. During the phase of expansion which ended with nationwide coverage in March 2006, the programme had successfully addressed several operational challenges. In 2007, alongside maintaining and improving the core services of the programme, RNTCP has implemented many new initiatives and forged innovative partnerships.

Since its inception, the programme has initiated more than 8 million TB patients on treatment thereby saving more than 1.4 million additional lives and in 2007 alone, more than 1.4 million TB patients started RNTCP TB treatment with free quality-assured drugs.

In order to achieve the TB-related targets of the United Nations Millennium Development Goals (MDGs) by 2015, RNTCP is implementing the 2006 Global Stop TB Strategy. TB mortality in the country has reduced from over 5 lakh deaths per annum at the beginning of the programme to the current estimate of less than 3.7 lakh deaths per annum. Repeat population surveys conducted by TB Research Centre, Chennai, in a sub-district population in Tamil Nadu, show a 12% annual decline in prevalence of TB disease after implementation of RNTCP services.

The national programme is addressing the newer challenges, such as TB/HIV collaborative activities, building partnerships with other sectors, and strengthening Advocacy, Communication, Social Mobilisation (ACSM) activities in order to achieve the MDGs. TB/HIV collaborative activities implemented jointly by the RNTCP and NACP have been scaled up to cover 14 states, and are being extended to the entire country. As a result, there has been a quantum jump in the number of cross referrals between the two programmes. The process for collaboration with all stakeholders through constant interaction for increased participation of all sectors in RNTCP is well on its way. The programme has facilitated the formation of a coalition of professional medical associations and a consortium of NGOs. ACSM activities are being conducted aimed at informing people about TB, combating stigma and discrimination, and engaging and empowering people to take action for improving case detection and treatment adherence.

A major challenge for the programme in achieving the goal of TB control is multi-drug resistant TB (MDR-TB**)** and the potential emergence of the threat of virtually untreatable extensively drug resistant TB (XDR-TB). Drug resistance surveillance (DRS) surveys conducted in Gujarat and Maharashtra found that the prevalence of MDR-TB is less than 3% amongst new cases and 12-17 in re-treatment cases. The most effective means of preventing the further development of MDR-TB and subsequently XDR-TB is through maintaining and improving the quality of RNTCP-DOTS, and more importantly promotion of the rational use of first and second line anti-TB drugs amongst all health care providers especially when treatment is given outside of RNTCP. In 2007, the national programme initiated DOTS Plus services for the management of MDR-TB in Gujarat and Maharashtra. These services will be introduced in other states across the country in a phased manner in subsequent years.

I would like to re-iterate that the irrational use of first and second line anti-TB drugs for the treatment of TB patients needs to be discouraged and RNTCP guidelines need to be followed for the diagnosis and treatment of TB cases, and good quality DOTS services ensured for preventing the further development of MDR-TB.

This is the eighth annual report of RNTCP to be published. The Programme has come a long way from it's starting point and has been recognised globally, which makes myself and my Ministry very proud of the achievements to date. RNTCP continues to perform as one of the best national disease control programmes in my Ministry. I would urge that all people involved in TB control efforts continue to work with their high levels of dedication and commitment in order to achieve the ultimate goal of a TB-free India. I hope that all partners and agencies will also continue to work with the same zeal and dedication in supporting the Government's efforts to sustain the achievements.

February 15, 2008

Dr. Anbumani Ramadoss

ABBREVIATIONS

ACSM	Advocacy, Communication and Social Mobilisation
AIDS	Acquired Immune Deficiency Syndrome
AIIMS	All India Institute of Medical Sciences
ANSV	Annual Negative Slide Volume
ART	Anti Retroviral Therapy
ARTI	Annual Risk of Tuberculosis Infection
ASHA	Accredited Social Health Activist
CDC	Centres for Disease Control and Prevention
CGHS	Central Government Health Scheme
CHAI	Catholic Health Association of India
CHC	Community Health Centre
CII	Confederation of Indian Industries
CMAI	Christian Medical Association of India
CTD	Central TB Division
DALYs	Disability Adjusted Life Years
DANIDA	Danish International Development Assistance
DDG	Deputy Director General
DFID	Department for International Development
DGHS	Director General of Health Services
DMC	Designated Microscopy Centre
DOTS	Directly Observed Treatment Short-course
DRS	Drug Resistance Surveillance
DST	Drug Susceptibility Testing
DTC	District Tuberculosis Centre
DTCS	District TB Control Society
DTO	District Tuberculosis Officer
E	Ethambutol
EQA	External Quality Assessment
GMSD	Government Medical Store Depot
GoI	Government of India
HBCs	High Burden Countries
HRD	Human Resource Development
ICB	International Competitive Bidding
ICMR	Indian Council of Medical Research

ICTC	Integrated Counselling and Testing Centre
IEC	Information, Education and Communication
IMA	Indian Medical Association
IRL	Intermediate Reference Laboratories
ISTC	International Standards for Tuberculosis Care
KAP	Knowledge, Attitude and Practices
LT	Laboratory Technician
MDGs	Millennium Development Goals
MDR-TB	Multi Drug Resistant TB (resistance to at least rifampicin and isoniazid)
MIFA	Management of Information for Action
MIS	Management Information System
MMWR	Mortality and Morbidity Weekly Report
MO	Medical Officer
MoHFW	Ministry of Health and Family Welfare
MOTC	Medical Officer-Tuberculosis Control
MoU	Memorandum of Understanding
NACO	National AIDS Control Organisation
NACP	National AIDS Control Programme
NGO	Non Governmental Organisation
NRHM	National Rural Health Mission
NRL	National Reference Laboratories
NTF	National Task Force
NTI	National Tuberculosis Institute
NTP	National Tuberculosis Programme
NUHM	National Urban Health Mission
OR	Operational Research
OSE	On-site Evaluation
PHC	Primary Health Centre
PP	Private Practitioner
PPM	Public-Private Mix
PSU	Public Sector Units
PTB	Pulmonary Tuberculosis
PWB	Patient-wise Box
QA	Quality Assurance

R	Rifampicin
RBRC	Random Blinded Re-Checking
RNTCP	Revised National Tuberculosis Control Programme
SCC	Short Course Chemotherapy
SDS	State Drug Stores
SPR	Slide Positivity Rate
STC	State TB Cell
STDC	State Tuberculosis Training & Demonstration Centre
STF	State Task Force
STLS	Senior TB Laboratory Supervisor
STO	State TB Officer
STS	Senior Treatment Supervisor
TB	Tuberculosis
TBCTA	Tuberculosis Coalition for Technical Assistance
TRC	Tuberculosis Research Centre
TU	Tuberculosis Unit
UHC	Urban Health Centre
USAID	United States Agency for International Development
USHA	Urban Social Health Activist
WHO	World Health Organization
XDR-TB	Extensively Drug Resistant TB
Z	Pyrazinamide
ZTF	Zonal Task Force

CONTENTS

RNTCP OVERVIEW 2007

Achievements of RNTCP

Programme Performance and Achievements

RNTCP has been recognised for the fastest expansion of DOTS in the world, with over 55-fold expansion in RNTCP coverage since 1998, leading to total coverage of the country in March 2006.

- Since inception of RNTCP, more than eight million patient have been initiated on treatment, resulting in saving more than 1.4 million additional lives.
- In 2007 alone, more than 6.48 million TB suspects have been examined. More than 1.47 million patients have been initiated on treatment.
- During the year 2007, new sputum positive case detection rate of 70% and treatment success rate of 86% was achieved.
- Diagnostic facilities have been established in >12,000 laboratories throughout the country. As a result, the proportion of sputum positive cases confirmed in the laboratory are now double that of the previous programme and are on par with international standards.
- RNTCP has successfully involved 261 medical colleges, over 2900 NGOs, 17000 Private Practitioners and over 150 corporate sector health units.
- Quality Assurance protocol for smear microscopy has been implemented in all the states.
- In 2007 alone, more than 58,000 care providers have been trained.
- Sound training materials have been developed for all categories of staff.
- About 140 internal evaluations have been conducted in 2007.

DOTS Plus

- DOTS Plus services for the management of MDR-TB patients have been rolled out in the states of Gujarat and Maharashtra in March, 2007 and the first patients were initiated on treatment in August, 2007. Since then, 65 MDR-TB cases have been initiated on treatment in Gujarat and 24 in Maharashtra.
- Two intermediate reference laboratories (IRL) have been established and accredited (one each in the states of Maharashtra and Gujarat) to carry out quality assured culture and Drug Susceptibility Testing (DST) for diagnosis of MDR-TB.
- Eleven other such State laboratories have been established and are in the process of accreditation.
- Another 13 State IRLs are in the process of being established. This will ensure atleast one quality assured C&DST testing lab per major state for the diagnosis and follow-up of MDR-TB patients.
- A consensus statement on the problem, prevention, management and control of multi drug resistant (MDR) and extensively drug resistant (XDR)-TB was released following a consultative meeting of national experts organised by the TB Research Centre, ICMR, Govt. of India, on 14-15 September 2007, at Chennai.

TB-HIV Collaboration

- TB-HIV collaborative activities have been scaled up in all states in the country.

The last ten years have seen India moving at a great pace with advancement and development in all fields. The state of public health has improved due to the efforts of the government and collaboration between the public sector and civil society.

Tuberculosis (TB) is one disease which India is trying to control and prevent. India as one of the High Burden Countries (HBCs) has implemented Revised National Tuberculosis Control Programme (RNTCP) to slow the spread of TB and weed it out in the near future. The Government of India (GoI) has committed to meet the United Nations Millennium Development Goals (MDGs) for TB (target 8) by 2015.

The RNTCP is in the 11th year of its implementation having been formally launched in 1997 following a pilot test from 1993-96.

- Joint training modules on TB/HIV have been formulated for various categories of staff of RNTCP and NACP and training activities are being scaled-up.
- ART-DOTS linkages are being established at all the ART centres of HIV/AIDS control programme to ensure optimal access to TB diagnostic and treatment services by HIV infected persons attending these centres.
- In the year 2007 alone more than 1,10,000 TB suspects were referred from ICTCs to RNTCP and of them 22057 were diagnosed as having TB. More than 77,000 TB patients were tested for HIV and of them 9,471 were HIV positive. The quantum of cross-referrals across the programmes has shown more than 300% increase in comparison to 2004-05.
- Pilot testing of decentralised mechanism for cotrimoxazole preventive therapy for HIV positive TB patients was undertaken by RNTCP in collaboration with NACO in three districts of Andhra Pradesh.

Advocacy, Communication and Social Mobilisation (ACSM) Activities

- Three day annual training of state IEC officers done in August 2007.
- To strengthen ACSM activities in the districts, support staff in the form of Communication Facilitators have been provided to help districts to plan and implement need based ACSM activities.
- IEC Baseline document has been developed which has baseline information about KAP as well as about the capacity of the states and districts to plan and implement IEC activities.

Impact of the Programme

- TB mortality in the country has decreased from over 5 lakh deaths per annum at the beginning of the programme to around 322,000 deaths per annum at present.
- National estimates of Annual Risk of Tuberculosis Infection (ARTI) prior to 2000 were 1.7% and estimates based on National ARTI survey in 2001-03 are 1.5%. Repeat ARTI survey has been initiated this year.
- Repeat disease prevalence surveys conducted by TRC in its field research area indicate an annual decline in prevalence of disease by 12%. Disease prevalence surveys have been initiated at 6 other sites across the country this year.

Other Activities

- Scaling up of the state level intermediate referral laboratories (IRL) capacity for nationwide implementation of external quality assessment (EQA) of sputum smear microscopy services and provision of culture and drug sensitive testing.
- Operational Research priority areas identified and action plan developed for dissemination of results of these studies.
- Five meetings of the Zonal Task Force (ZTF) and a meeting of the National Task Force (NTF) for enhancing the involvement of medical colleges were held during the year. NTF endorsed statement on rational use of second line drugs and agreed to the contents of the consensus statement on MDR & XDR TB.
- Workshop on training methodology for revision and update of training material held in Chennai.
- National Consultation on revision of NGO/PP Guidelines held in January 2008.

TB: BURDEN OF THE DISEASE IN INDIA

"I have no business to live this life if I cannot eradicate this horrible scourge from the mankind,"

Robert Koch, delivering a lecture at Berlin University on his discovery of tuberculosis bacilli, 1882

It has been 125 years since Robert Koch first discovered the tuberculosis bacilli and the world is still fighting hard to control this deadly but easily curable disease. The poor and developing countries are still in the grip of TB despite the courageous efforts of Dr. Koch and generations of his successors.

In India 1.8 million tuberculosis cases occur annually, accounting for one-fifth of the world's new TB cases and two-thirds of the cases in the South-East Asia Region. This makes India the highest TB burden country in the world. It has been estimated in the year 2000, that there were about 3.8 million bacteriologically positive TB cases in the country.

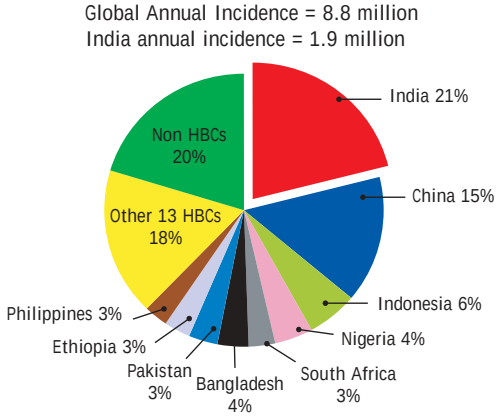
Magnitude of the Disease

Tuberculosis has been not only affecting the health of our country, but also the economy as well. The spread of HIV during the last two decades and the emergence of MDR-TB and XDR-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 untreated, HIV prevalence, mortality and demography.

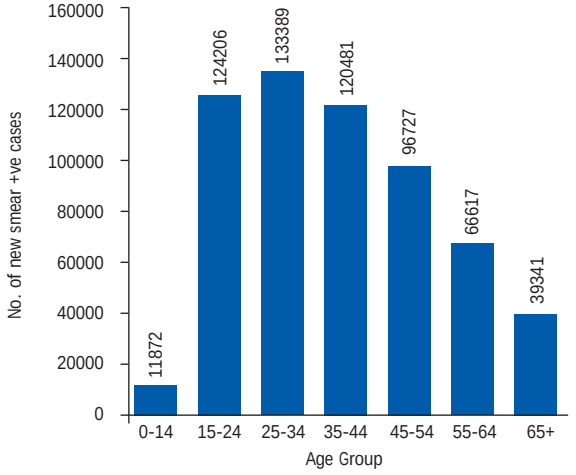
It is estimated that two of every five Indians are infected with the TB bacillus. There is a strong chance that of them, at least 10% will develop TB disease during their lifetime. Of the 1.8 million new TB cases occurring annually, around 0.8 million have sputum positive pulmonary TB. One sputum positive 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.

Fig. 1: India is the highest TB burden country accounting for one-fifth of the global incidence



Source: WHO Geneva; WHO Report 2007: Global Tuberculosis Control; Surveillance, Planning and Financing

Fig. 2: TB affects mostly young adults



Source: RNTCP Data, 2006

WORLD TB DAY – 24th March 2008

This year the slogan for World TB Day is "I Am Stopping TB".

I Am Stopping TB is more than a slogan. It is the start of a two-year campaign that belongs to people everywhere who are doing their part of "Stop TB".

This year's World TB Day is about celebrating the lives and stories of people affected by TB: women, men and children who have taken TB treatment; nurses; doctors; researchers; community workers - anyone who has contributed towards the global fight against TB.

Economic Burden

The economic burden of TB on India is huge and is a great loss in terms of lives, money and lost workdays. TB was declared a "global emergency" by WHO in 1993 because of its toll on the health of individuals and the wider social and economic impact on overall development of a country. In India, 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).

Premature death (more than 80%) is the main cause of the burden of tuberculosis, as measured in terms of disability-adjusted life years (DALYs) lost. The most affected age group (15–54 years) is the economically productive age. Over 70% of TB cases in India occur in this economically productive age group. It is one of the leading infectious diseases causing death. As per WHO estimates in 2005, approximately 322,000 persons in India died of tuberculosis (mortality rate 29 per 100,000 persons), which was estimated by India at over 500,000 annually prior to 2000 (WHO Report 2007 - Global TB control, surveillance, planning and financing).

TB affects the most productive age group (15-54 years)

Social Burden – TB and Poverty

Tuberculosis is mainly a disease of the poor. The majority of its victims are migrant labourers, slum dwellers, residents of backward areas and tribal pockets. Poor living conditions, malnutrition, shanty housing and over crowding are the main reasons for the spread of the disease.

TB is more common amongst men. They are more likely to default out of treatment. This increased morbidity and mortality in men affects the family and in particular the women in the family.

Women bear the brunt of the disease more than men. They ignore the disease initially fearing its interference in their daily chores. TB deaths among women have major implications for child survival, economic productivity and family welfare.

There is also the fear of stigma and rejection from family members and society. This is one main reason why women try to suppress TB symptoms. It is estimated that annually more than 100,000 women with TB are abandoned by their families. Children of parents suffering from the disease also have to bear the burden. More than 300,000 children are forced to leave school every year, because their parents have TB.

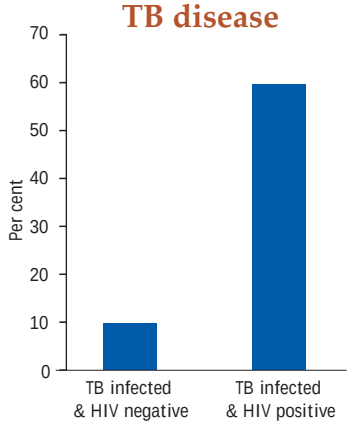
The social stigma of the disease adds to the burden for both men and women. Studies indicate that while men have to deal with the stigma at their workplaces and in the community, women are ostracised in the household and neighbourhood.

Tuberculosis and HIV

HIV infection has a close relation with tuberculosis. There are an estimated 2.5 million Indians living with HIV infection. The immune system gets weaker due to HIV infection and chances of getting infected by TB increases. An HIV positive person is six times (50–60% lifetime risk) more likely to develop TB disease once infected with TB bacilli, as compared to an HIV negative person, who has a 10% lifetime risk.

Based on mathematical modeling, WHO has estimated a prevalence of 1.2% of HIV in adult TB patients in India. However, the overwhelming majority of TB cases in India are non-HIV infected persons.

Fig. 3: Lifetime risk of developing TB disease



Multi Drug Resistant TB (MDR-TB)

The emergence of strains of Mycobacterium tuberculosis that are resistant to antimicrobial agents is a worldwide problem. MDR-TB, defined as resistance to at least isoniazid and rifampicin, two of the most potent anti TB drugs, is a reflection of poor management of TB cases. Drug resistance develops either due to infection with a resistant strain, or as a result of inadequate treatment such as when a patient is exposed to a single drug, or because of selective drug intake, poor compliance, use of inappropriate non-standardised treatment regimens, irregular drug supply, poor drug quality, or rarely erratic absorption of medications.

MDR-TB is posing a potential threat to tuberculosis control in the country. Continuous monitoring of drug resistance trends is essential in order to assess current interventions and their impact on the TB epidemic. Though drug resistance against Isoniazid and Rifampicin has been frequently reported in India, the available information is hospital-based, using non-standardised methodology and may not have used quality controlled laboratories for drug susceptibility testing. A series of representative drug resistance surveillance studies are being undertaken in selected states in accordance with the WHO global surveillance of drug resistance project. Data from these surveys will provide more valid estimates of the occurrence of MDR-TB and allow for monitoring of the trends in drug resistance levels. Available data from the earlier district-wise and now state representative surveys in Gujarat and Maharashtra have found ~3% MDR-TB



among new cases and 12–17% among cases with a previous history of anti-TB treatment.

Although the prevalence of MDR-TB in the country in term of percentage is quite small, these rates translate into large absolute number. Moreover, MDR-TB patients often live a number of years before succumbing to the disease. Thus, maintaining the chain of transmission of the drug resistant strains. This threatens the success of TB control strategies which are aimed at breaking this very chain of transmission.

Extensively Drug Resistant TB (XDR-TB)

In the year 2006, MMWR (Mortality and Morbidity Weekly Report) for the first time reported on the detection of Extensively drug resistant TB popularly known as XDR-TB wherein the resistance amplified from Rifampicin and INH to second line drugs. **"As per the latest definition, XDR-TB is a subset of MDR-TB with additional resistance to Fluoroquinolones and one of the second line injectables namely Kanamycin, capreomycin and Amikacin."** XDR-TB has been reported in all regions of the world. In India too, XDR-TB has been reported by isolated studies with non-representative and highly selected samples. The magnitude of the problem remains to be determined due to the absence of laboratories capable of conducting quality assured second line DST. What is of great concern is the potential threat of XDR-TB in India with unregulated availability and injudicious use of second line drugs along with non-existence of systems to ensure standardised regimens and treatment adherence for MDR-TB treatment outside RNTCP.

Epidemiological Impact of TB Control Activities

TB control is a long-term battle and will require extended political support. The targets of case detection and treatment success must first be reached and then maintained for several decades. It has been documented in several countries that initial success in the control of TB may lead to complacency and a subsequent resurgence of cases and the emergence and spread of drug resistance. The success of RNTCP in India has been acknowledged worldwide. However, it will take 10–15 years before the success makes a significant epidemiological impact on the problem of TB in the country. Considering the existing caseload, and the continuous addition to this pool of patients, TB control services would be required for at least another 40–50 years in India. Though efforts have been made for decentralisation of the programme, it may not be possible for the states to fund the logistics and technical support required for implementing it at this stage. It is essential that Central assistance to the states for implementation of RNTCP should continue for at least another 5–10 years. Besides, the emergence of TB-HIV co-infection and MDR-TB has increased the severity and magnitude of TB epidemic globally and poses an important challenge to the TB control efforts in India. The national programme, partners and all healthcare providers need to proactively address these challenges to realise the goal of TB control.

STOP TB STRATEGY

"In recent years India has taken major strides towards controlling TB. The Stop TB Partnership is confident that India will continue the momentum and contribute significantly towards the implementation of the Global Plan to Stop TB, 2006-2015."

Dr. Marcos Espinal, Executive Secretary, Stop TB Partnership Secretariat, Geneva

WHO Stop TB Strategy

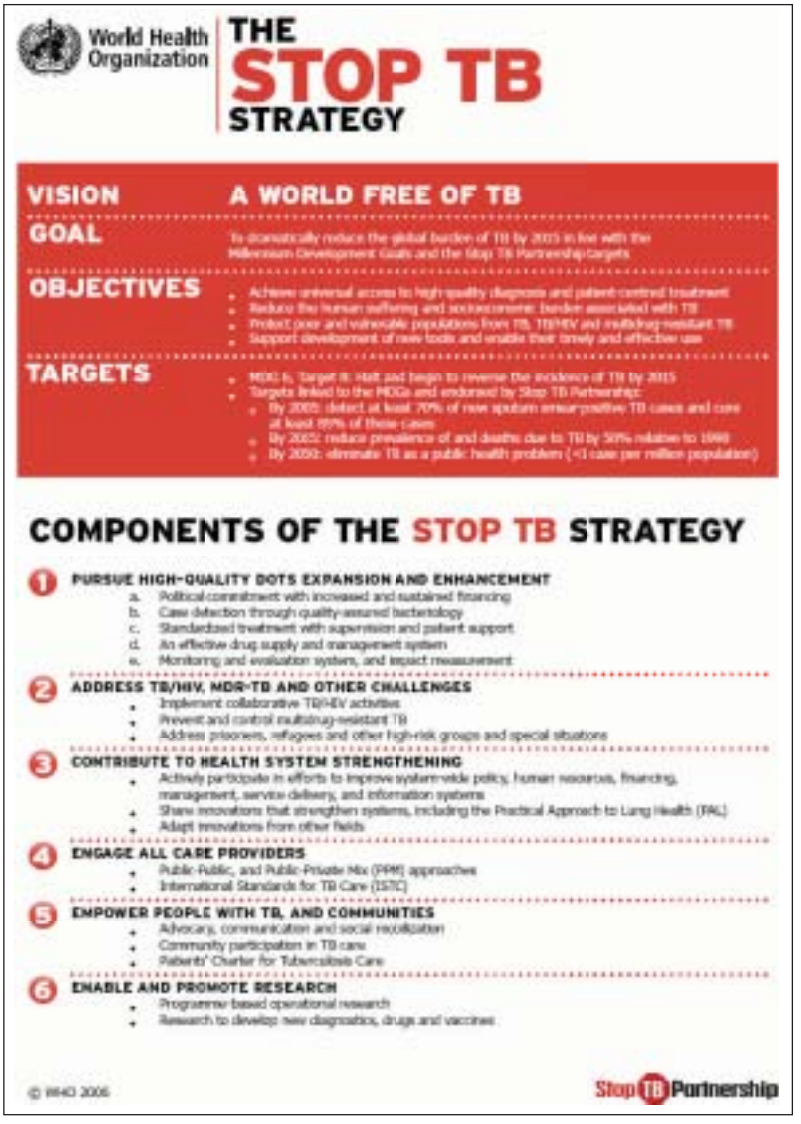
Global TB control has made major progress in the past decade. The widespread implementation of the internationally recommended Directly Observed Treatment, Short-course (DOTS) strategy has proved to be an effective tool in controlling TB on a mass basis and is being practised in over 180 countries.

Maintaining the current status, the prime task for the next decade is to achieve the Millennium Development Goals (MDGs) and related Stop TB Partnership targets for TB control. Meeting these targets requires a coherent strategy that enables existing achievements to be sustained, effectively addresses the remaining constraints and challenges, and underpins efforts to strengthen health systems, alleviate poverty and advance human rights.

The new WHO Stop TB Strategy, released in 2006 has identified six principal components to realise the global TB-related MDGs by 2015. They are:

- Pursuing high quality DOTS expansion and enhancement
- Addressing TB/HIV, MDR-TB and other challenges
- Contributing to health system strengthening
- Engaging all care providers
- Empowering patients and communities
- Enabling and promoting research.

The twin objectives of RNTCP include the curing of at least 85% of the new sputum positive TB patients and detecting at least 70% of such patients in India, following the internationally recommended DOTS strategy and the Stop TB strategy.



Union Minister of Health and Family Welfare at NATCON 2007

(Right to Left) Union Minister of Health and Family Welfare, Union Health Secretary, Director General Health Services at a review meeting in north-eastern region

After a successful pilot in 1993, which established the technical and operational feasibility of the strategy, expansion of DOTS services took place on a larger scale in India from 1997. The past 11 years have witnessed a rapid expansion of RNTCP, covering the whole nation by March 2006.

The essential core element of RNTCP in Phase I (1997-2006) was to ensure high quality DOTS expansion in the country, addressing the five primary components of the DOTS strategy.

Political and Administrative Commitment

The Government of India has given TB control programme topmost priority. The government's continuous financial commitment, human resources and administrative support speak of its commitment to control and eliminate TB. The success of the programme, to date, bears testimony to the commitment of the government.

Good Quality Diagnosis through Sputum Microscopy

Sputum microscopy continues to be the best tool for detection of infectious TB, as it provides information on the extent of infection of the patient, helps in categorisation of the patient for treatment and is an objective method to monitor the patient's progress. It is less expensive than an x-ray and is relatively easy to perform. Moreover, the result is available within two days and correct treatment can be started immediately. Apart from sputum microscopy, RNTCP also uses standardised diagnostic algorithms to diagnose and treat all forms of TB.


Sputum Microscopy

Uninterrupted Supply of Good Quality Drugs

RNTCP uses intermittent short-course chemotherapy (SCC) regimens to facilitate the direct observation of treatment. This is consistent with the World Health Organization guidelines. RNTCP ensures that there is no interruption in treatment and drugs once a person is diagnosed with TB. Sufficient anti-TB drugs in patient wise boxes are made available at all the appropriate levels (Peripheral Health Institution/TB unit/District/ State/National) to make sure that the treatment does not stop mid-way due to the lack of drugs.

The uninterrupted supply of drugs to each patient is made possible through the "patient-wise box." Patient-wise drug boxes (for adult and paediatric cases) are an innovation of RNTCP wherein an individual box of medications for the entire treatment is earmarked for every patient registered. This ensures the availability of the full course of treatment to the patient the moment he/she is registered for treatment. Patient-wise drug boxes have helped to improve patient care, adherence, drug supply and drug stock management.

Under RNTCP, all sub-centres, primary health centres, community health centres, and other health facilities provide DOTS services to patients. As TB patients

Patient wise boxes and blister packs

Paediatric patient wise drug boxes

may also seek treatment from private physicians, the government has taken initiatives to provide DOTS services through the private sector and through community volunteers.

Directly Observed Treatment

Directly observed treatment (DOT) is one of the key elements of the DOTS strategy. In DOT, an observer (health worker or trained community volunteer who is not a family member) watches and supports the patient in taking drugs. It is this DOT provider who ensures that the patient takes the right drugs in the right doses, at right intervals, for the right duration.

Under optimal conditions, treatment without observation achieves a success rate of 30–60%, whereas, direct observation results in 85–95% success rate.

DOT helps in reducing development of drug resistance, because direct observation ensures adherence and reduces the probability of emergence of drug-resistant organisms. Following a correct treatment regimen further reduces the spread of infection in the community and helps in controlling the development of new cases.

DOT provider

Systematic Monitoring and Accountability

RNTCP has a systematic monitoring mechanism which accounts for the outcome of every patient put on treatment. There is a standardised recording and reporting structure in place. The cure rate and other key indicators are monitored regularly at every level of the health system and supervision is intensified if an area is not meeting the desired expectations. The uniqueness of RNTCP is that it shifts the responsibility for cure from the patient to the health system.

Addressing Stop TB Strategy under RNTCP

RNTCP Phase II (2006-11) is in line with the new WHO Stop TB Strategy for TB control and covers all the activities proposed under the strategy. The RNTCP is already collaborating with the National AIDS Control Programme (NACP) to address challenges of TB-HIV co-infection. It has developed guidelines for management of MDR-TB and has rolled out DOTS Plus services in the state of Gujarat and Maharashtra. By strengthening laboratories and drug delivery systems, and by providing additional contractual staff, RNTCP continues to strengthen the general health system in the country. In the area of involvement of all care providers, public as well as private, RNTCP has been a global leader.

Table 1: Categorisation and treatment regimens under RNTCP

Category of treatment	Type of patient	Regimen*
Category I	New sputum smear-positive Seriously ill** new sputum smear-negative Seriously ill** new extra-pulmonary	$2H_3R_3Z_3E_3 + 4H_3R_3$
Category II	Sputum smear-positive relapse Sputum smear-positive failure Sputum smear-positive Treatment after default Others***	$2H_3R_3Z_3E_3S_3 + 1H_3R_3Z_3E_3 + 5H_3R_3E_3$
Category III	New sputum smear-negative, not seriously ill New extra-pulmonary, not seriously ill	$2H_3R_3Z_3 + 4H_3R_3$

* The number before the letters refers to the number of months of treatment. The subscript after the letters refers to the number of doses per week. The dosage strengths are as follows: H: Isoniazid (600 mg), R: Rifampicin (450 mg), Z: Pyrazinamide (1500 mg), E: Ethambutol (1200 mg), S: Streptomycin (750 mg). Patients who weigh 60 kg or more receive additional Rifampicin (150 mg). Patients who are more than 50 years old receive Streptomycin (500 mg). Patients who weigh less than 30 kg receive drugs as per body weight. Patients in Categories I and II who have a positive sputum smear at the end of the initial intensive phase receive an additional month of intensive phase treatment.

**Seriously ill also includes any patient, pulmonary or extra-pulmonary who is HIV-positive and declares his/her sero-status to the categorising/treating medical officer (MO). For the purpose of categorisation, HIV testing should not be done.

***In rare and exceptional cases, patients who are sputum smear-negative or who have extra-pulmonary disease can have Relapse or Failure. This diagnosis in all such cases should always be made by an MO and should be supported by culture or histo-pathological evidence of current, active TB. In these cases, the patient should be categorised as 'Others' and given Category II treatment.

An effective advocacy, communication and social mobilisation (ACSM) strategy is in place, in order to maintain high visibility of TB and RNTCP amongst policy makers, opinion leaders and community to sustain long-term political and administrative commitment and greater community involvement.

The programme with active support of the TB Research Centre, Chennai, National TB Institute, Bangalore, Lala Ram Swarup Institute of TB and Respiratory Diseases, Delhi, JALMA Institute, Agra and other academicians in Medical Colleges and research institutes, has been undertaking operational research to generate evidence to inform policy decisions and assess the magnitude of disease burden and impact of RNTCP DOTS programme.

Dr. L. S. Chauhan, DDG (TB) being felicitated by Union Minister of Health and Family Welfare at NATCON 2007

The Future

RNTCP is essential to maintain the international standards for the management of TB cases. It is necessary that professional bodies endorse the International Standards for TB Care (ISTC) and pledge that all health care providers shall give care to their TB patients as per the international standards.

The National Task Force (NTF) on involvement of Medical Colleges in RNTCP in its meeting held in October 2007, endorsed the Chennai Consensus Statement on the problem, prevention, management and control of MDR and XDR-TB in India.

The Indian medical community should commit to provide the best possible care in managing patients with tuberculosis, in accordance with international guidelines and standards and ensure judicial use of first and second line anti TB drugs.

RNTCP is building partnership with civil society organisations and other sectors to reach out to larger sections of society through the network of these organisations.

In addition, the MDR-TB management needs to be scaled up under the RNTCP DOTS plus strategy while promoting rational use of second line anti TB drugs in the country.

RNTCP: IMPLEMENTATION STATUS AND ACTIVITIES IN 2007

The Indian TB Control Programme has successfully completed the largest and most rapid expansion of DOTS in history to cover the entire country. Phase II (2006-2011) of RNTCP is a step towards achieving the TB-related UN millennium development goals.

The programme has developed a 'Strategic Vision for TB Control for the Country up to 2015', under which it aims to achieve and maintain a cure rate of at least 85% in new sputum positive pulmonary TB patients, and detection of at least 70% of such cases. It aims to further increase the access of services to marginalised groups in hard-to-reach areas through continuation of all activities of Phase I and with intensive monitoring, supervision and evaluation. The Government of India stands fully committed towards the sustained implementation of RNTCP as a high quality programme, at least for the next few decades until tuberculosis ceases to be a public health problem in the country.

RNTCP Phase II is making efforts to strengthen the quality of DOTS through implementation of the RNTCP quality assurance protocol for sputum microscopy; decentralised accessible and patient friendly DOT services; pro-active Public-Private Mix (PPM) activities to increase the reach of DOT services; rational use of standardised first and second line anti-TB drugs; and need based advocacy, communication and social mobilisation to generate awareness and demand for quality services.

New activities have been proposed in RNTCP Phase II to provide care and management for MDR-TB cases throughout the country in a phased manner. The vision is to have a network of RNTCP accredited quality assured state level Intermediate Reference Laboratories (IRLs), one in each large state, providing culture and Drug Sensitivity Testing (DST) services for RNTCP and to have DOTS Plus sites, for the case management of MDR-TB patients as per guidelines by the years 2009.

Special Secretary, Health at national workshop of IMA PPM Project

RNTCP Activities 2007

The Revised National Tuberculosis Control Programme, since its inception in 1997 has trained over half a million staff in the health system, evaluated more than 30 million people with suspected TB, examined more than 100 million sputum slides and treated more than 8.2 million patients, thereby saving 1.4 million additional lives. This rapid expansion has not compromised on the quality of services. The results meet the internationally set benchmark of a treatment success rate of >85% among new sputum positive pulmonary TB cases. Case detection rate as per global target of 70% has been achieved.

TB-related Millennium Development Goals

Goal 6	Target 8
To combat HIV/AIDS, malaria and other diseases	To have halted by 2015 and reverse the incidence of malaria and other major diseases, including tuberculosis

Indicators for target 8 to be used to evaluate the implementation and impact of TB control:

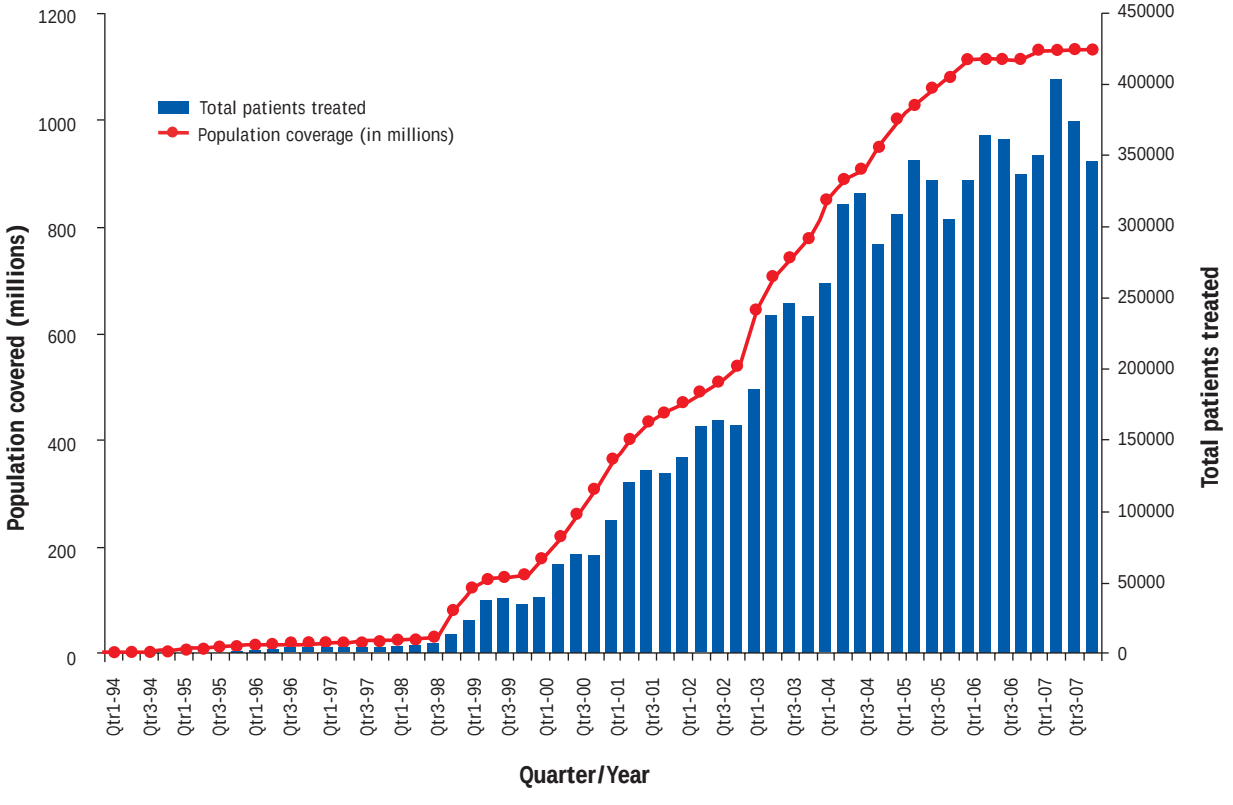
Indicator 23	Indicator 24
Between 1990 and 2015, to halve the prevalence and death rates associated with tuberculosis	By 2005, to detect 70% of new smear positive TB cases arising annually, and to successfully treat 85% of these cases

RNTCP is committed to implementing the 2006 Global Strategy to Stop TB and reaching the TB related targets of the Millennium Development Goals by 2015. The RNTCP II aims to provide a road map for TB control to achieve the long term goal, by 2015, of reducing the prevalence of TB by 50%.

RNTCP focuses on all the six components of Stop TB Strategy and activities during the year 2007, highlighting the progress made in each of the components.

The progress so far, of the second phase (2006–2011) of the RNTCP has been smooth. The inter-sectoral

Fig. 1: Population covered under DOTS and total TB patients put on treatment in each quarter



National consultation on revision of NGO/PP Guidelines, January 2008

collaboration has given RNTCP a strong edge. Most of the existing health care provider sectors, e.g. medical colleges, NGOs, private sector, health facilities under other ministries have successfully adopted RNTCP in their programmes. Their participation has strengthened the programme management capacity at central, state and district level. It has also helped in the training programmes, as it becomes a mix of different sectors with different experiences in TB control and prevention. The main focus is still on maintaining and improving the present quality of services by widening the scope for providing standardised, good quality treatment and diagnostic services to all TB patients. RNTCP wants to maintain a patient-friendly environment enabling patients to receive full health care from any facility they choose. This is where inter-sectoral collaboration comes into play.

In 2007, RNTCP has made a landmark achievement with the launch of DOTS Plus services for the management of MDR-TB patients.

RNTCP has also made efforts to consolidate laboratory network for culture and drug sensitivity testing.

RNTCP is extensively working to mainstream services for marginalised groups such as urban slum dwellers and tribals in terms of improved access to health facilities. Need-based, focused and people-centric advocacy, communication social mobilisation (ACSM) activities are regularly organised. Proper training is provided to the programme staff in counselling skills and interpersonal communication to bridge the gap between patients and providers. This ensures supportive environment for the patients which enables them to complete the treatment. The participation of the community in DOTS is one of the most essential part and RNTCP tries to involve the community to increase ownership of the programme.

An intensive systematic supervision of activities is carried out regularly to increase the efficiency of health workers by developing their knowledge, perfecting their skills, improving their attitudes towards work and increasing their motivation, and hence ensuring that the services provided are of the highest quality.

Pursue Quality DOTS Expansion and Enhancement

Commitment for Sustained Resources and Financing

The Government of India is fully committed to ensure sustained financing and others resource for RNTCP.

- The RNTCP Phase II project has been approved by the Govt of India for a period of five years (2006-2011).
- The total project cost of USD 256 million is for funding all the activities of the RNTCP, which

are part of the Central Programme. These include the components of training, minor civil works, drugs and equipment, monitoring and supervisory activities, medical college and other sector involvement.

- Since the entire programme is implemented through the Health system in the states, these funds do not include the costs borne by the States for manpower and infrastructure of the State Health Services which are utilised for RNTCP, as well as for all other National Programmes. This is a major contribution to the programme, and estimates of this funding amount are difficult to quantify.
- >60% is primarily borne by funds from the Govt of India, including the funds provided under the Development Credit Agreement with the World Bank.
- Remaining portion of the budget is provided through grants from the GFATM and the USAID.
- DFID provides drugs procured through the GDF/WHO for a population of 500 million.
- WHO is providing technical support to the programme which includes in the form of a National Consultants Network for the entire country.

An outlay of Rs. 267.00 crore was approved for this Programme for the year 2007-08. As the whole population of the country has been covered under RNTCP, more funds are required to be released to the State Societies. Requirement of drugs has also increased. Consequently, budget provision has been enhanced to Rs. 275.00 crore for the year 2008-09.

The project monitoring is done on a quarterly basis through submission of the Quarterly Reports by the States/Districts about their performance and expenditure for the Budget released to the States/ Districts. In addition, bi-annual review meetings are held at the Central level with all the States wherein both performance and expenditure are reviewed.

The Financial Consultants from the centre visiting the States for supervision, also train the staff and monitor expenditure.

GFATM funding for RNTCP programme

The Global Fund to Fight AIDS, Tuberculosis and Malaria was created to dramatically increase resources to fight three of the world's most devastating diseases, and to direct those resources to areas of greatest need. The Global Fund represents an innovative approach to international health financing and is a partnership between governments, civil society, the private sector and affected communities. Proposals for the funding grants are invited once a year and funds are disbursed only after thorough screening and examination of proposals by the Technical Review Panel.

RNTCP has been successful in obtaining GFATM funding in Rounds 1, 2, 4 and 6. The total funding approved in the four rounds is about US$ 91.2 million over different time frames, for TB programme activities for 296 million population in the states of Chhattisgarh, Jharkhand and Uttarakhand (Rounds 1 and 6), Andhra Pradesh and Orissa (Round 4) and 57 districts of Bihar and Uttar Pradesh (Round 2). Public-private mix sub-projects are being funded in Rounds 1, 2 and 6. Drug resistance surveys, mortality studies and operational research projects are also being funded in different GFATM funding rounds.

With GFATM funding support, the country has established more than 3000 Designated Microscopy Centres, trained more than 9000 key RNTCP staff and diagnosed and treated 3.22 lakh NSP patients and a total of more than 7.46 lakh patients have been put on DOTS. The Global Fund support has made a significant contribution to the programme. Future funding grants will be aimed at augmenting public private sector participation in the programme. The programme has been recognised globally for its achievements.

Table 1: Year wise allocation for the 11th Five Year Plan

(Rs. in crore)

Sl. No.	Year	Allocation proposed in 11th Plan	Actual allocation as per Planning Commission
1	2007-08*	286.00	267.00
2	2008-09	265.00	275.00
3	2009-10	276.00	285.00
4	2010-11	300.00	300.00
5	2011-12	320.00	320.00
		1447.00	**1447.00**

*Out of the allotted budget of Rs. 267.00 crore, expenditure to the extent of Rs. 207.85 crore has already been incurred.

Mr. Robert B. Zoellick, President of World Bank with Dr. L. S. Chauhan and Shri Deepak Gupta, Special Secretary Health at NDMC Chest Clinic, Delhi, November 2007

Case Detection through Quality Assured Microscopy

A nation-wide network of RNTCP quality assured designated sputum smear microscopy laboratories is envisaged, which provides appropriate, available, affordable and accessible quality assured diagnostic services for TB suspects and cases. To meet the standards of internationally recommended diagnostic practices for TB, the programme provides the supply of quality reagents and equipment to the laboratory network. An in-built routine system has been designed for sputum microscopy External Quality Assessment (EQA) and for supervision and monitoring of the diagnostic systems by the RNTCP Senior TB Laboratory Supervisor (STLS) locally and by the intermediate (state level) and national laboratory network for RNTCP at the higher levels.

Quality assured laboratory services

Under RNTCP, efforts have been made to consolidate the laboratory network into a well organised one for carrying out External Quality Assessment (EQA) of sputum smear microscopy, Drug Resistance Surveillance (DRS), mycobacterial culture and Drug Sensitivity Testing (DST), and DOTS Plus related activities. The RNTCP laboratory network consists of four designated National Reference laboratories (**NRLs),** state-wise Intermediate Reference Laboratories (**IRLs**) and designated microscopy centres (**DMCs**).

Protocols and manuals are available under the programme to strengthen the laboratory network for conducting these activities. More than 90% of the districts in the country are implementing RNTCP EQA protocol (On-site Evaluation and Random Blinded Re-checking) and 24 state level Intermediate Reference Laboratories (IRLs) are being strengthened to undertake C&DST activities for the diagnosis and follow-up of MDR-TB patients.

The Central RNTCP Laboratory Committee, constituted with microbiologists of the NRLs, CTD and WHO India representatives as members, works as a task force to guide laboratory related activities of the programme.

National Reference Laboratories (NRLs)

The four NRLs under the programme are Tuberculosis Research Centre (TRC), Chennai, National Tuberculosis Institute (NTI), Bangalore, Lala Ram Swarup Institute of Tuberculosis and Allied Sciences (LRS), Delhi and JALMA Institute, Agra. The NRLs work closely with the IRLs, monitor and supervise the IRL's activities and also undertake periodic training for the IRL staff in EQA, culture & DST activities.

Two microbiologists and three laboratory technicians have been provided by the RNTCP on a contractual basis to each NRL for supervision and monitoring of laboratory activities. The NRL microbiologist and laboratory

National Reference Laboratory, Tuberculosis Research Centre, Chennai

supervisor/technician visit each assigned state (Table 1) at least once a year for two to three days as a part of on-site evaluation under the RNTCP EQA protocol. Regular supervisory visits are undertaken by the NRL microbiologists to the IRLs to provide technical support for establishing quality assured C&DST services. NRLs also undertake periodic proficiency testing of the IRLs as part of the accreditation process under RNTCP.

Intermediate Reference Laboratory (IRL)

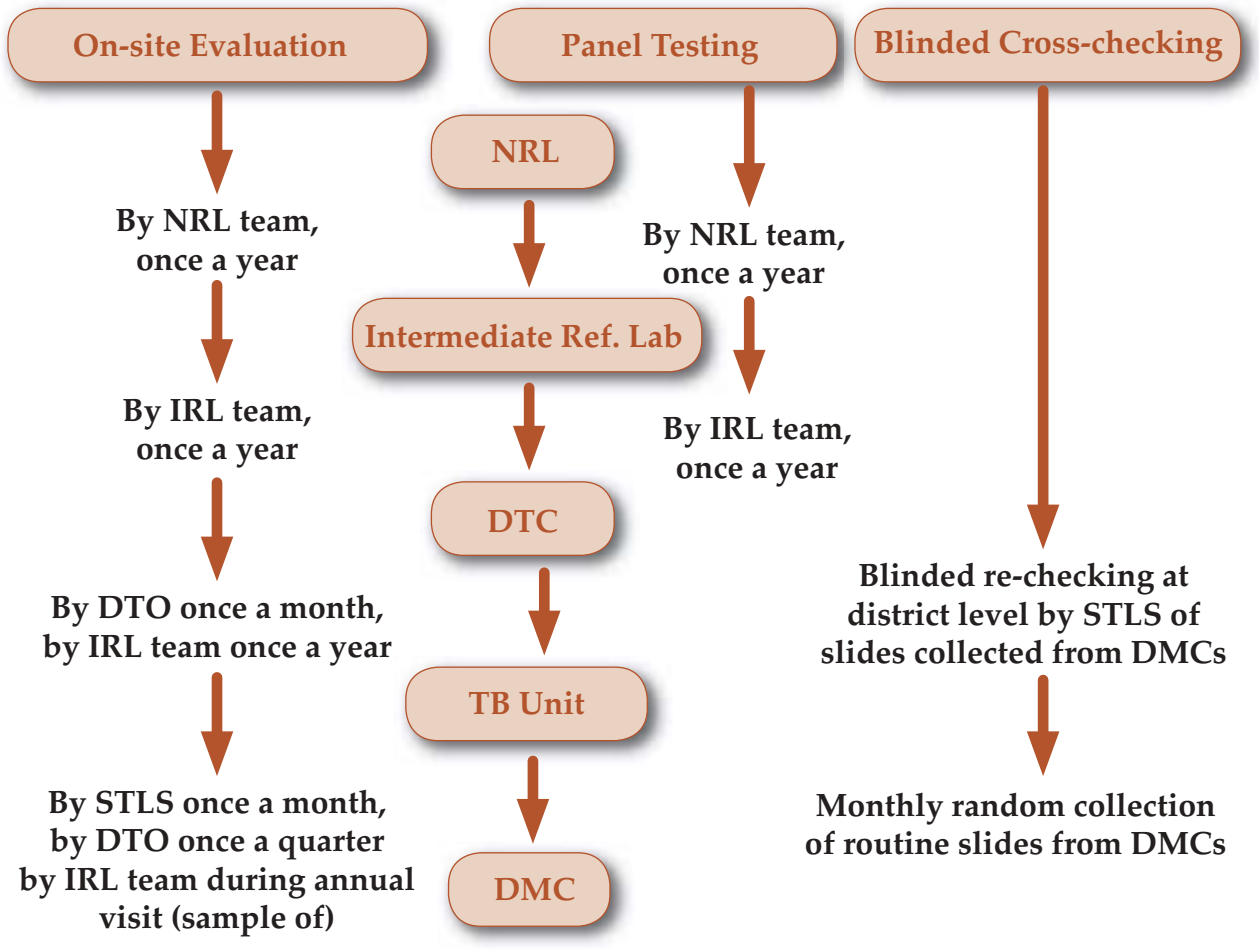
The states have designated one IRL in the STDC/Public Health Laboratory/Medical College of the respective state. The functions of IRL are supervision and monitoring of EQA activities, mycobacterial culture and DST and Drug Resistance Surveillance (DRS) in selected states. The IRL ensures the proficiency of staff performing RNTCP smear microscopy activities by providing technical training to district and sub-district laboratory technicians and STLS. The IRL undertakes on-site evaluation and panel testing to each district in the state, at least once a year. IRLs will be accredited by the NRL to which they are assigned for proficiency in mycobacterial culture and DST.

Central procurement of laboratory equipment for Culture and Drug Sensitivity Testing (DST) is being done by the procurement agency—UNOPS. Presently, the process of procurement of these equipment through ICB is going on for the Intermediate Reference Labs (IRLs) in 13 States i.e. Assam, Bihar, Goa, Himachal Pradesh, J&K (Jammu), J&K (Srinagar), Karnataka, Madhya Pradesh, Maharashtra (Pune), Manipur, Punjab, Sikkim and Uttar Pradesh. These states are expected to complete the required civil works, electrical installation etc.

Table 2: States assigned to NRLs for monitoring of laboratory activities

NRL	States and Union Territories (UTs) assigned for EQA	Total no. of IRLs assigned	Total no. of states/UTs assigned	No. of districts in the states
TRC	Andhra Pradesh, Chhattisgarh, Goa, Gujarat (Dadra & Nagar Haveli, Daman & Diu), Kerala (& Lakshadweep), Sikkim, Tamil Nadu, Uttar Pradesh (2), Punjab & Chandigarh	10	13	214
LRS	Delhi, Arunachal Pradesh, Haryana, Himachal Pradesh, Uttarakhand, Manipur, Nagaland, Mizoram, Assam, Meghalaya, Tripura	7	11	141
NTI	Maharashtra, Orissa, Rajasthan, West Bengal & Andaman Nicobar, Karnataka, Puducherry, Bihar, Madhya Pradesh, Jharkhand, Jammu & Kashmir	10	11	279

Fig. 2: External quality assessment activities of RNTCP



(as informed) for the IRLs before the equipment reaches the laboratory sites and also to select and train the required laboratory staff for the IRLs.

Designated Microscopy Centre (DMC)

The most peripheral laboratory under the RNTCP network is the DMC which serves a population of around 100,000 (50,000 in tribal and hilly areas). At present, more than 12,000 DMCs are available for conducting quality assured sputum smear microscopy.

External quality assessment for smear microscopy

A process has been established under RNTCP to assess the laboratory performance utilising the RNTCP External Quality Assessment (EQA) guidelines and currently 90% of the districts in the country are implementing quality assurance protocol.'

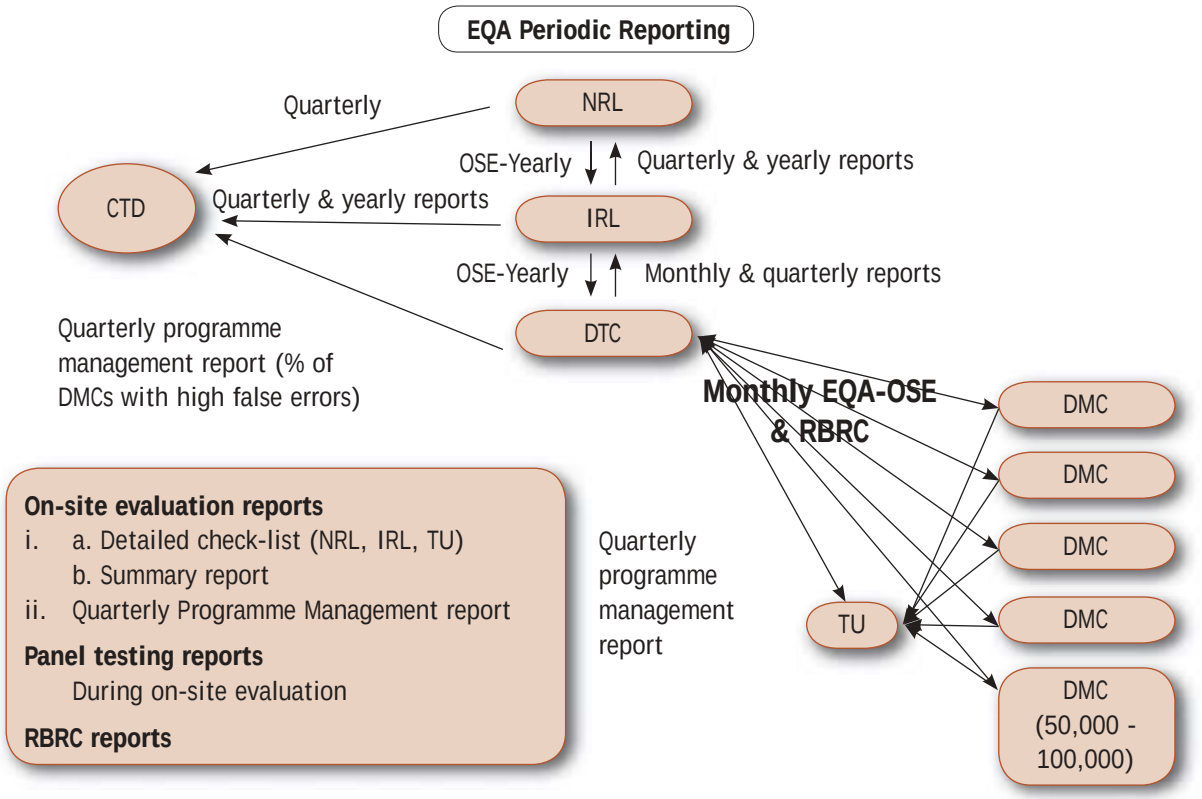
Recommendations of the annual supervisory visits to the states by the NRLs have focused on operational and technical problems of the laboratories and staff in conducting effective OSE visits to districts/diagnostic centres, panel testing of STLS, operationalisation of RBRC procedures etc.

For capacity building of state level programme managers (STOs and STDC/IRL directors) in EQA, training is imparted to make them aware of their roles and responsibilities with regard to issues such as setting up of IRLs, human resources, conducting effective on-site evaluations by the IRL staff to DMC level, bio-medical waste disposal, infection control measures and other operational and technical issues. A separate training, which focuses mainly on technical aspects of EQA protocol, was also provided to the microbiologists and lab technicians of IRLs by the NRLs.

Drug Resistance Surveillance (DRS)

The prevalence of anti-TB drug resistance in the community can be taken as an indicator of the

Fig. 3: Reporting procedure



effectiveness of the TB control activities in the community over a period of time. RNTCP has taken steps to measure this important indicator across the country. For determining the prevalence of anti-TB drug resistance among new and previously treated patients, state-wide DRS surveys are being conducted periodically by the programme. The state wide DRS surveys of Gujarat and Maharashtra were conducted in 2005-06. The reports from these states indicate that the level of multi drug resistance TB amongst new cases is ~3% and amongst re-treatment cases 12-17%. A second round of DRS surveys will be carried out in the same states, using the same methodology, after a period of five years.

Pilot study for DRS survey in Andhra Pradesh has been completed by the state and the survey will be started by March 2008. The DRS survey of western

Table 3: National level summary of Annual Negative Slide Volume (ANSV) and Slide Positivity Rate (SPR) in 2006

ANSV Range *SPR % Range of DMCs

			SPR % Range			Total
			<5	5-15	>15	
ANSV Range	<301	DMCs % of Total	429 4.2%	386 3.8%	163 1.6%	978 9.5%
	301-500	DMCs % of Total	191 1.9%	600 5.8%	144 1.4%	935 9.1%
	501-1000	DMCs % of Total	429 4.2%	1755 17.1	410 4.0	2594 25.3
	>1000	Count	372 3.6%	4406 42.9%	981 9.6%	5759 56.1%
Total		DMCs % of Total	1421 13.8%	7147 69.6%	1698 16.5%	10266 100.0%

Table 4: List of designated IRLs and status of EQA activities

State	Name of institution where IRL was identified/is functional	EQA		
		OSE	RBRC	Panel Testing
Andhra Pradesh	STDC, Hyderabad	Yes	Yes	Yes
Arunachal Pradesh	STDC, Naharlagun	Yes	Yes	No
Assam	Guwahati Medical College	Yes	Yes	No
*Bihar	STDC, Patna	Yes	Yes	Yes
Chhattisgarh	Regional Leprosy Training and Research Institute, Raipur	Yes	*Yes	No
Delhi	New Delhi TB Centre	Yes	Yes	Yes
Gujarat	STDC, Ahmedabad	Yes	Yes	Yes
Goa	GMC, Bambolim	Yes	Yes	No
Haryana	PHL, Karnal	Yes	Yes	Yes
Himachal Pradesh	TB Hospital, Dharampur	Yes	Yes	Yes
*Jammu	Jammu Medical College	*Yes	*Yes	No
Kashmir	STDC, Srinagar	Yes	Yes	No
Jharkhand	Itki TB Sanatorium	Yes	Yes	No
Karnataka	STDC, Bangalore	Yes	Yes	Yes
Kerala	STDC, Thiruvanathapuram	Yes	Yes	Yes
Madhya Pradesh	STDC, Bhopal	Yes	Yes	No
Maharashtra	STDC, Nagpur	Yes	Yes	Yes
Manipur	STDC, Imphal	Yes	Yes	Yes
*Orissa	STDC, Cuttack	*Yes	*Yes	Yes
Puducherry	STDC, Puducherry	Yes	Yes	Yes
Punjab	STDC, Patiala Government Medical College	Yes	Yes	Yes
Rajasthan	STDC, Ajmer	Yes	Yes	Yes
Sikkim	STDC, Gangtok	Yes	Yes	No
Tamil Nadu	Institute of Thoracic Medicine, Chennai	Yes	Yes	No
*Uttar Pradesh	STDC, Agra and KGMU, Lucknow	*Yes	*Yes	No
Uttarakhand	STDC, Dehradun	Yes	Yes	No
West Bengal	STDC, Kolkata	Yes	Yes	Yes

(*5 districts in Bihar, 12 in UP, 3 in Orissa and 4 districts in Jammu are not implementing RBRC till now)

UP and Orissa will be initiated soon by the respective states.

Accreditation of laboratories for mycobacterial culture and drug sensitivity testing

Accreditation application formats were developed by the programme for accreditation of the IRLs and Medical College Laboratories for performing mycobacterial culture and DST under RNTCP in 2007. A manual on Fluorescent Microscopy was also developed for using as a reference material by the IRLs and other laboratories. The programme also plans to accredit and utilise the services of well functioning private and NGO mycobacteriology culture laboratories under the NGO/PP schemes.

C&DST equipment supplied by the Central TB Division have been installed in 13 state level IRLs in 2007 (Andhra Pradesh, Kerala, Orissa, Tamil Nadu, West Bengal, Rajasthan, Uttarakhand, Chhattisgarh, Jharkhand, Haryana Gujarat, Maharashtra and Delhi). C&DST training for the state microbiologists and Lab

technicians was undertaken by their respective NRLs during 2007. The accreditation process for these IRLs is ongoing at present.

Effective Drug Supply and Management System – Procurement Issues

Since 2005, supplies of first line anti-TB drugs for 500 million population are being acquired through the Global TB Drug Facility (GDF) utilising financial support of the UK's Department for International Development (DFID). Until 2008, the drugs for Haryana are being procured by WHO through GDF, utilising USAID support. The procurement of drugs for rest of the population is being undertaken by the programme as per procedures laid down by the World Bank.

The first procurement of second line anti-TB drugs for RNTCP has been made at the central level for 100 MDR-TB patients, who will be initiated on treatment in the states of Gujarat and Maharashtra from early 2007. With the expansion of DOTS Plus services, the drug procurement for World Bank-funded areas will be made as per World Bank procedures. For the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM)-funded states, procurement of the second line anti-TB drugs will be made through the Green Light Committee mechanism as required by GFATM.

Drug procurement

First line Anti TB Drugs: Procurement of first line anti-TB drugs for 500 million population of the country through DFID support and also for state of Haryana through USAID support continues to be done by Global Drug Facility (GDF). For rest of the country, a new Procurement Agency (UNOPS) is at present procuring first line anti-TB drugs through International Competitive Bidding (ICB).

Second line anti-TB Drugs: For seven World Bank funded states (Delhi, Gujarat, Maharashtra, Kerala, Rajasthan, Tamil Nadu and West Bengal), procurement of second line anti-TB drugs under DOTS Plus programme is presently being done by UNOPS through ICB. For GFATM and USAID funded states (A.P. and Haryana respectively), procurement of these drugs is being done through Green Light Committee (GLC) of Stop TB Partnership.

DOT provider, Pharmacist, in the district, Koppal, Karnataka

Drug logistics management

Over the past few years, the responsibility of drug logistics management has been commendably taken up by the States which can be seen in the fact that more than 40 State Drug Stores (SDS') have been established in various States in the country. Based on the Quarterly Reports, SDS then issue drugs to the districts. Respective states are also expected to make arrangements for transportation of drugs from SDS to District Tuberculosis Centres (DTCs) and onwards.

To strengthen the States in issues concerning procurement and drug logistics, Central TB Division has successfully trained all the key staff responsible for procurement and drug logistics at the National level. The objective of the training was (i) to build capacity of States regarding decentralised procurement and management of Drug Inventory in the State/SDS and (ii) Training of trainers at State/National level on efficient Drug Logistics Mechanism. The trainings were conducted for the STOs, SDS In-charges, SDS pharmacists and Trainers, who would in turn train the DTOs, DTC Pharmacists, Medical Officers and STS in their respective States. An action plan to this effect has also been requested from the States. Five zonal training workshops of two days duration each, conducted at the national level, were able to train about 135 personnel. Future plans include visit to States to study the impact of these workshops in terms of adoption of the good logistics management learned during the workshops.

Table 5: Reserve drug stocking norms and calculation of drug requirement

Level	Stock for utilisation	Reserve stock	Drug requirements
PHI	1 month	1 month	(Monthly consumption x 2) - (existing stock in PHI at the end of month)
TU Drug store	0 months	2 months	(Quarterly consumption/3) x 4 – (existing stock in TU including PHI drug stores at end of the quarter)
District drug store	0 months	3 months	(Quarterly consumption/3) x 7 – (existing stock in district including TU & PHI drug stores at end of the quarter)
State drug store	0 months	3 months	(Quarterly consumption/3) x 10 – (existing stock in SDS including stocks in the districts drug stores at end of the quarter)

The drugs procured continue to be stored at the six Government Medical Store Depots (GMSDs) across the country. Drug requirements, consumption and stock positions, both at State and district levels continue to be monitored at the Central TB Division through the quarterly reports submitted by the districts. The drugs are issued to the States to replenish their stocks up to 10 months stock level. It is expected that buffer stocks shall also be ensured at each level as per the stocking norms.

Importance of good storage conditions and safe custody of drugs in addition to good logistics management is also stressed upon the States, along with timely availability of drugs to the patients after diagnosis, with thorough dispensing instructions to the patient.

Quality assurance of drugs

Maintaining quality of drugs remains a critical programme requirement. This is enabled through pre-dispatch testing of drugs and monitoring of the quality throughout their shelf-life up to consumption by the patients. CTD has hired an independent quality control laboratory at Indore, which regularly tests samples, taken on a random basis from DTCs, SDS' and GMSDs. A system is also in-place for the quality assurance of drugs through random sampling by GMSDs. In addition, the samples are also taken by State and Central Drug Inspectors and tested to ensure quality. The various measures that have been adopted by the programme for quality assurance include careful supplier selection, certification of good manufacturing practices, batch certification, pre- and post-dispatch inspection, proper storage and dispensing methods and product defect reporting.

Post procurement review

Post Procurement Reviews of all contracts below "prior review threshold levels" at the Central and State levels is being done every quarter by an independent Consultant (SGS Nederland B.V.) appointed by the World Bank. So far three such reviews have been conducted in eleven states. The Central TB Division (CTD) is monitoring the reports of such reviews and asks for action taken on these reports from the concerned states. The action taken by the states on these review reports is also being informed to the Empowered Procurement Wing (EPW) of the MoHFW and the World Bank.

Information about list of contracts issued under TB II funding at state and district levels is being obtained within 15 days of every quarter through separate e-mail ID created at CTD. Regular visits to various states by CTD officials are being done to monitor the procurement capacity of the states and also for post procurement audit. So far, Assam, Delhi, Jharkhand, Karnataka, MP and Orissa have been visited and a travel schedule has been made for visit to other states.

Monitoring and Evaluation System

The hallmark of success in RNTCP is demonstrated by its inherent ability to conduct regular supervision and monitoring at all levels – national, state, district and sub district. In addition, a robust recording and reporting system and a series of routine review meetings enable early corrections.

RNTCP is a programme that is managed both from the technical as well as programmatic point of view. Since it has a set of complex diagnostic, treatment and

follow-up modalities, the programme has an intensive and dynamic supervision and monitoring strategy. Dedicated supervisory staff, a recording and reporting system and a set of monitoring indicators to cover all the related activities ensures that the programme has an inherent capacity to identify issues and proactively consider remedial measures.

The activities extensively monitored by RNTCP are:
Programme indicators: These are monitored on the basis of quarterly reports of programme performance. Suitable feedback is sent to concerned states/districts.

Logistics and quality control: This is monitored through the information received from the procuring agency, supplier, Medical Stores Organisation (MSO), report of Government Medical Store Depot (GMSD) and the quarterly reports from the States/Districts.

Progress of training: Information is received from the quarterly reports on training and the compiled reports from training institutions.

Progress in filling up of key posts: Information is received from quarterly reports and reports of supervisory visits.

Expenditure and budget utilisation: This information is obtained from Statement of Expenditure (SOE), Utilisation Certificate (UC), Audit Report (AR) and from reports of states and central level evaluations.

ACSM activities: It is ensured that the action plan on ACSM submitted by all the States/Districts is accordingly put into practice locally.

The process of monitoring broadly covers supervisory visits, review meetings at various levels and programme evaluation by different levels of health personnel. Measurable indicators for quality control, programme outcomes and operational effectiveness are the basis for programme monitoring.

Analysis and feedback on routine surveillance data
Surveillance data are received through the quarterly reports. An accurately compiled quarterly report provides base level information on the performance of the programme. CTD analyses these quarterly reports received from the States/Districts. Monitoring capacity at State level has been enhanced so that State TB Officers/Medical Officers-STC analyse the quarterly reports and provide feedback to the districts within the state.


Supervisory visit, STO, Mizoram on way to Phainuam Sub-centre

Supervisory visits and feedback

Monitoring of the performance of the programme is mainly done by supervisory visits. Good supervision helps to increase the efficiency of the staff by developing their knowledge, perfecting their skills and improving their attitudes towards work.

Supervisory visit to Theng Umarahada a remote village situated on the foothills of the Nilgiris, Tamil Nadu

RNTCP lays out clear responsibilities to the respective staff at all levels in relation to supervisory visits. Schedules of supervisory visits by the managers at different levels are given below:

STS/STLS	STS to visit all the PHIs/DMC at least once in each month and STLS to visit all DMCs at least once a month.
MO-TC	To travel 7 days in a month on supervisory visits.
DTO	To travel about 20 days in a month and visit all the DMCs at least once in a month and all the PHIs at least once in a quarter.
STO	To visit each district at least twice a year.

STS/STLS, MO-TC and DTO record their observations in a tour diary, a supervisory check list and a supervision register placed in all RNTCP facilities. Supervisory visits encourage good practices of RNTCP as well as identify and correct inadequate performances.

Members of World Bank Mission Team interacting with patient in Andhra Pradesh

Regular review meetings

RNTCP has a system for periodic review of the programme implementation activities at all levels. The level and the frequency of these meetings are as given below:

Periodic in-depth evaluations

Information and action points generated through periodic evaluations are an important tool for evaluation of the programme. States conduct internal evaluation of two districts per quarter. In addition, internal evaluations are conducted by the central level with active participation of personnel from the states, Medical Colleges and NGOs.

In the year 2007, the states have evaluated 140 districts using a standardised format which covers the entire gamut of RNTCP services. The reports are disseminated amongst the DTOs to enable corrective actions to similar issues in their districts. Actions taken on the recommendations are regularly reviewed by the state. The central level has visited nine states – evaluated 19 districts in addition to reviewing state level issues. The findings of the central level evaluations were discussed with the highest authorities of health and administration of the state to enlist their active support for TB control activities in the state.

The programme was also evaluated by the Joint Monitoring Mission – a conglomerate of technical experts in the field of TB control, public health and programme management. The World Bank conducted two reviews during the year visiting six states. These evaluations strengthened the supervision and monitoring activities of the states and districts.

Chief Minister of Andhra Pradesh releasing Annual Status Report

Peripheral Health Institutions (PHIs) & Designated Microscopy Centres (DMCs)	MO i/c PHI/DMC conducts a meeting of all the staff involved in RNTCP and reviews their activities weekly.
Tuberculosis Unit (TU)	MO-TC reviews the activities of STS/STLS at least fortnightly.
District Level	• DTO reviews the monthly activity reports of all MOTCs, STS and STLS within the district during monthly district level review meetings. • CMO and DM also review the programme on a regular basis.
State Level	• State level review meetings are be held every quarter. • STO also reviews the monthly activity reports of DTOs within the state. • Recommendations of all the evaluations and the actions taken are discussed at the meeting.
National Level	CTD conducts review meetings of STOs twice in a year. All important issues covering technical performance, administrative and managerial issues, manpower resources, logistics and financial issues are discussed.

Table 6: Supervision and monitoring activities and tools under RNTCP for each level of programme implementation

Unit responsible (persons)	S & M activities	Tools
Central Unit [Deputy Director General (DDG)/ Chief Medical Officers (CMOs)/ WHO India team/ NRL/CTD RNTCP-WHO Consultants]	• Undertake programme reviews with State TB officers at national level twice a year • Conduct periodic review of RNTCP in the states with the DTOs during state level review meetings • Conduct Central level internal evaluations of at least 2 districts every month • NRL team to visit IRL (for On-site evaluation and Panel testing) at least once every year	Programme reviews Annual programme report (National) 6-monthly programme review with State TB Officers (STOs) Quarterly and annual State reports District evaluation reports Monthly activity reports of STOs Monthly reports of RNTCP-WHO Consultants Report from medical college ZTFs
State TB Cell (STO/MO/STDC Director/IRL Microbiologists/ RNTCP-WHO Consultants)	• Visit all districts in the state at least once every 6 months • Undertake state level internal evaluations of atleast 2 districts every quarter • IRL team to visit DTC at least once a year • Conduct quarterly review meetings with the district TB officers at state level. Meeting to be chaired by Health Secretary/Director General of Health Services (DGHS)	Annual programme report (State and districts) Quarterly programme review with District TB Officers (DTOs) Quarterly District/TU reports District evaluation reports Monthly activity reports/tour diaries of DTOs Tour diary of STO/supervision checklist Report from medical college STF
District TB Centre (District TB Officer/2nd MO DTC)	• Reserve 3–5 days in a week for field visits (between DTO and 2nd MO) • Visit all TB units every month. • Visit all microscopy centres every quarter • Visit the homes of at least 3 randomly selected NSP patients and their DOT providers on every field visit day. • Visit to medical college if any, every month • Conduct DTCS review meetings every quarter – to be chaired by DM • Conduct monthly review meeting at the DTC – to be chaired by DM/CMO	Annual district report Quarterly TU reports Monthly programme review Monthly PHI reports Quality assurance report Tour diary of DTO/supervision checklist Monthly activity reports of MOTCs, STS and STLS RNTCP TB register Supervision register Referral for treatment register Supervisory checklist
Medical Officers (TB Control)	• Reserve at least 7 days in a month for field visits. • Visit all microscopy centres every month. • Visit most of the participating private as well as public Peripheral Health Institutions (PHIs) every quarter. • Visit the homes of at least 3 randomly selected NSP patients along with their DOT providers on every field visit day. • Conduct fortnightly review meeting with STS/STLS	RNTCP TB register RNTCP Laboratory register Supervision register PHI monthly reports OSE QA reports of STLS Supervisory checklist
STLS	• Visit all the microscopy centres at least once every month. • Conduct OSE at the DMC	Laboratory register OSE checklist
STS	• STS should visit all DMCs and PHIs at least once every month. The STS should visit all the smear positive patients within one month of starting treatment.	TB register Laboratory register Treatment cards Referral for treatment register Supervisory checklist

Address TB-HIV, MDR-TB and other Challenges

Implement TB-HIV Collaborative Activities

The interaction between HIV infection and tuberculosis (TB) is well documented. HIV-infection is among the strongest risk factors for progression of latent TB infection to active disease. HIV-infected persons are many times more likely to develop TB than patients without HIV infection.

India is the highest TB burden country in the world, with over 1.8 million estimated TB cases per year. DOTS expansion was completed only in 2006. India also has the world's third highest HIV burden, with estimated 2.46 million People Living with HIV/AIDS (PLHA) in 2006. This represents just about 0.36% of the adult population in the country.

RNTCP is implementing TB-HIV Coordination activities since 2001. Phase I of the Coordination activities was initiated to cover the HIV High Prevalent states namely-Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra, Nagaland & Manipur. In 2004 the Phase II of the co-ordination saw activities being extended to eight additional states namely Delhi, Gujarat, Himachal Pradesh, Kerala, Orissa, Punjab, Rajasthan and West Bengal. The coordination is now being extended to the entire country.

Additional technical support has been provided to the implementing states for TB-HIV in the form of Consultants funded by WHO, in HIV High burden States and TB-HIV Coordinators funded through the project, in the HIV low burden States. Joint training modules on TB-HIV have been formulated for various categories of staff of RNTCP and NACP and the training activities are being scaled-up.

Meeting of CPT pilot evaluation team with district staff at Visakhapatnam, Andhra Pradesh

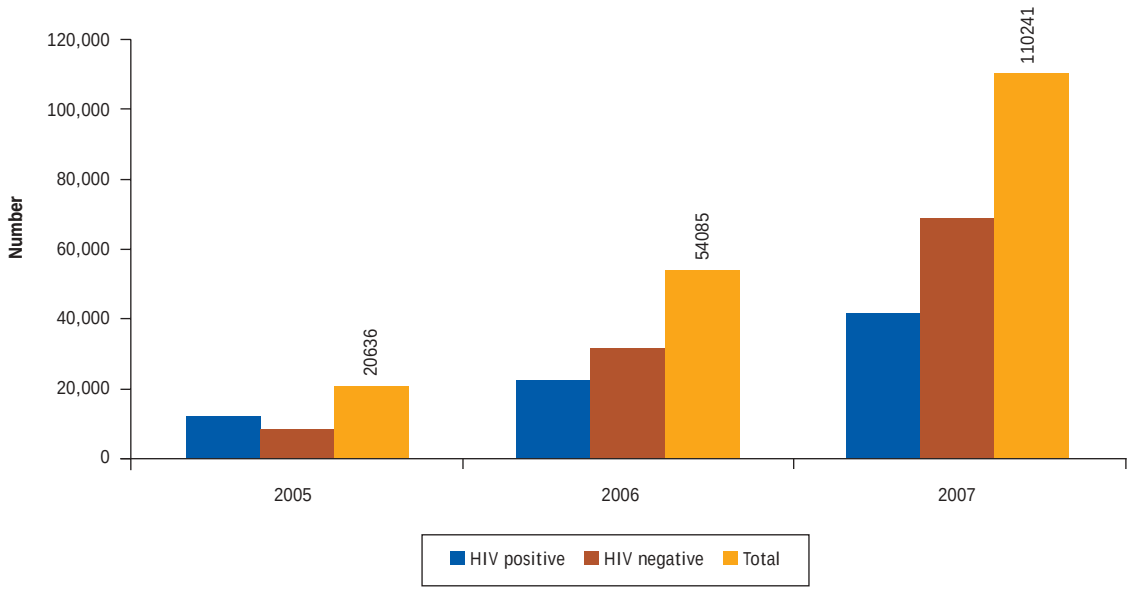
TOTs have been conducted for State and District level trainers and the training of field staff is on-going and is at various stages in different States. IEC materials regarding TB are being made available at National AIDS Control Programme (NACP) facilities. Selective IEC material on HIV is displayed at RNTCP facilities. As a new initiative RNTCP, in coordination with NACP, has developed a "10 point counselling tool" for the ICTCs so as to facilitate counselling of ICTC clients on TB. The same has been made available in all the ICTCs across the country.

Central TB Division (CTD) & National AIDS Control Organisation (NACO) have formulated the "National framework for joint TB-HIV collaborative activities". This document replaces the joint action plan for TB-HIV which was formulated in 2001. The National framework describes the various TB/HIV activities that are to be undertaken at the National, State and District level and is a guidance document to the States and Districts to plan their activities. Under the National framework, access to HIV care for HIV infected TB patients has been prioritised. The activities that are to be undertaken under the plan are:

- Establishment of coordination mechanisms at the National, State and District level and joint planning and review at all levels
- Service delivery coordination, with special emphasis on access to HIV care
- Involvement of NGOs working in NACP and RNTCP in TB-HIV collaborative activities
- Operational research
- Infection control measures.

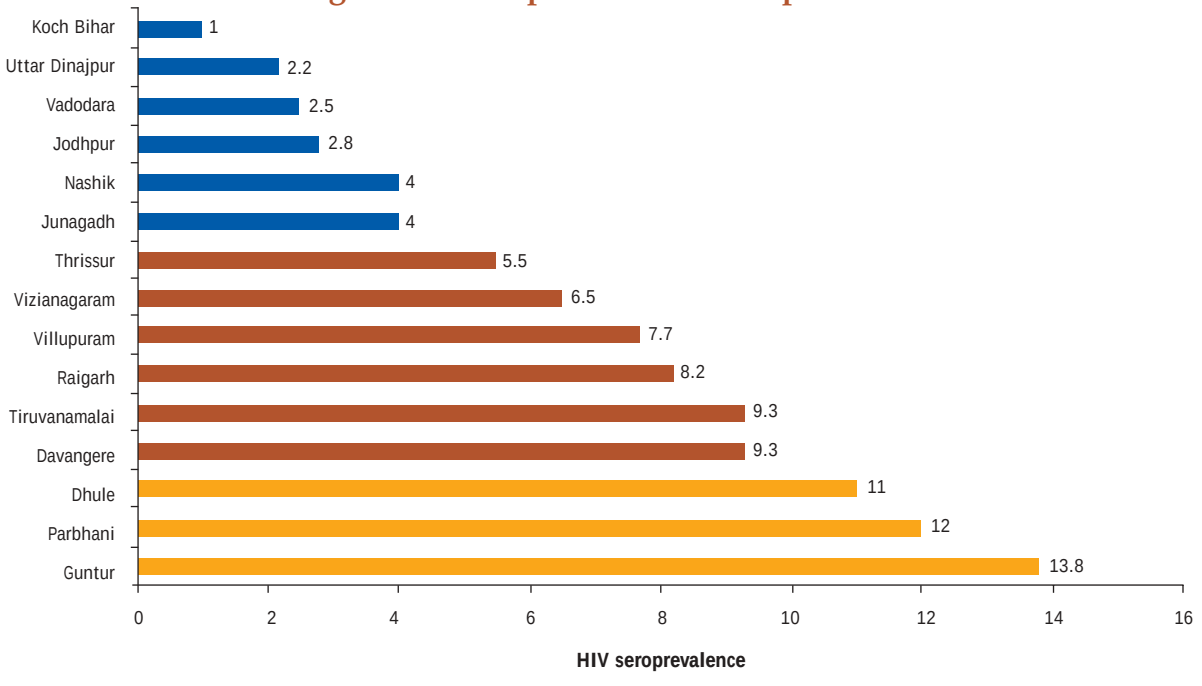
Year 2007 saw a dramatic rise in the quantum of referrals across the programmes. More than 110,000 TB suspects were referred from ICTCs to RNTCP and of them more than 22,000 were diagnosed as having TB. More than 77,000 TB patients were tested for HIV and of them 9,471 were HIV positive. There has been a quantum jump (more than 300% in comparison to 2005) in the number of cross referrals across the two programmes, which has resulted in improving the access of DOTS to PLHA.

Fig. 4: Progress in cross-referral (1)
Number of clients referred from ICTCs to RNTCP services
2006 vs. 2007



In the year 2007, a number of new initiatives were undertaken in TB-HIV collaborative activities. The periodic HIV survey in TB patients, which was carried out in 4 districts in 2005-06, was scaled–up to 15 districts in 2006-07. This survey represents the most detailed evaluation to date of HIV epidemiology among TB patients in India. The survey demonstrated that the prevalence of HIV among TB patients varied substantially across the geographic regions, between 1% and 13.8% across the 15 surveyed districts. This striking variability in the prevalence of HIV infection among TB patients supports a stratified approach to TB/HIV collaborative activities across the country.

Fig. 5: HIV seroprevalence in TB patients



ICTC counsellor sharing her experience with the Member of World Bank Mission Team, Rajasthan

A pilot was undertaken by CTD in close collaboration with NACO for decentralised delivery of Cotrimoxazole preventive therapy for HIV infected TB patients through RNTCP mechanisms. This pilot was undertaken in 3 districts with high prevalence of HIV in Andhra Pradesh. Evaluation of the pilot was undertaken by a team of experts from NACO, CTD and WHO in September, 2007. Based on the recommendations of the evaluation team, the pilot is planned to be scaled up to states with higher burden on HIV. A pilot for "assessing the operational feasibility of routine referral of TB patients for ICT" is being undertaken in two high HIV prevalence districts with assistance from TRC, Chennai and NTI Bangalore.

The involvement of NGOs working with NACP in special populations with high burden of HIV in TB/HIV collaborative activities has been prioritised. A sensitisation work-shop for Avahan (the Bill and Melinda Gates AIDS initiative in India) and its partner NGOs was organised in 2007 and as a result a large number of these NGOs have included provision of RNTCP services in the package of services being provided by them. During 2008, CTD and NACO would be focusing on extending cross-referral linkages between RNTCP services and the expanding number of ART centres and care and support centres. The programmes are also now working on an intensified TB-HIV package of services in states with higher burden of HIV, which would include routine offer of ICT to all TB patients, decentralised delivery of CPT for HIV infected TB patients and linkages with ART centres. The programmes are currently working on developing training material for the same.

The Challenge of MDR and XDR TB to RNTCP

Drug resistant tuberculosis has frequently been encountered in India and its presence has been known virtually from the time anti-tubercular drugs were introduced for the treatment of TB. The emergence of multi-drug resistant TB (MDR-TB), which is defined as resistance to at least isoniazid and rifampicin, has become a significant public health problem in a number of countries and an obstacle to effective TB control. There have been a number of reports on drug resistance in India including state level Drug Resistance Surveillance (DRS) surveys conducted in Gujarat and Maharashtra. Data from these studies have found MDR-TB levels of about 3% in new cases and 12-17% in re-treatment cases. Although the level of MDR-TB in the community is low in relation to percentages and proportions it translates into large absolute numbers.

In 2005, the United States' Center for Disease Control and Prevention (CDC), WHO and 14 SRLs initiated a study to determine the extent to which resistance to second-line anti-TB drugs had emerged among MDR-TB isolates. The data were published by WHO and CDC in March 2006 in an article in which XDR-TB was first defined. The study, which analysed 17,690 isolates from 49 countries, showed that 20% of all isolates collected were MDR-TB and that 2% were XDR-TB. In the year 2006, MMWR (Mortality and Morbidity Weekly Report), for the first time reported on the detection of extensively drug resistant tuberculosis (XDR-TB) wherein the resistance has amplified from Rifampicin and INH to second line drugs. As per the latest definition, XDR-TB is a subset of MDR TB with resistance to fluoroquinolones and any one of the three injectables namely kanamycin, capreomycin and amikacin.

Extensively drug-resistant TB (XDR-TB) has been reported in all regions of the world and classified rapidly by WHO as a serious emerging threat to public health, especially, but not only in countries with a high prevalence of the human immunodeficiency virus (HIV).

The potential destruction which can be caused by this virtually untreatable form of TB has been demonstrated in the KwaZulu Natal province of South Africa. In 2006 a deadly outbreak of XDR–TB occurred in the small town of Tugela Ferry in KwaZulu-Natal. Of 536 TB patients at

the Church of Scotland Hospital, which serves a rural area with high HIV rates, some 221 patients were found to have MDR-TB and of these, 53 were diagnosed with XDR-TB. Fifty-two of these patients died within days of detection.

XDR-TB in India

XDR-TB has been reported in India by isolated studies with non-representative and highly selected clinical samples. The magnitude of the problem remains to be determined due to the absence of laboratories capable of conducting quality assured second line DST.

However, what is frightening is the potential threat of XDR-TB in India with unregulated availability and injudicious use of the second line drugs along with non-existence of systems to ensure standardised regimens and treatment adherence for MDR-TB outside RNTCP.

Consequences of MDR and XDR TB

The problem of MDR and XDR TB in India and across the world raises the possibility that the current TB epidemic of mostly drug susceptible TB will be replaced with a form of TB with severely restricted treatment options. If this happens it would jeopardise the progress made in recent years to control TB globally as well as in India and would also put at risk the plans to progress towards a world where TB ceases to be a public health problem.

RNTCP DOTS Plus services

In 2007, RNTCP made a landmark achievement with the launch of the DOTS Plus services for the management of MDR-TB patients in the states of Gujarat and Maharashtra. As per the plan 50 patients will be enrolled in each state in the first year, the number being doubled every year subsequently. The first patients were initiated on treatment in August 2007 and a total of 89 patients have been enrolled in these two states till February 2008.

The treatment of MDR is complex and is administered for a period of over two years on a daily basis including 6 to 9 months of injectables. Further the Cat IV drugs are known to cause severe adverse reactions. The management also requires a rigorous follow-up which includes smear, culture, bio-chemical tests and clinical check up at frequent intervals to evaluate the response to treatment. All these factors lead to high

Drugs for MDR-TB patients

rate of default amongst the MDR-TB patients. To ensure patient compliance the programme is emphasising on counselling of patients and their family members on an on-going basis. A pilot project involving NGOs to provide counselling services to the patients admitted at the DOTS Plus site and those under domiciliary care has been initiated in Gujarat and will be replicated at other DOTS Plus sites.

RNTCP response plan to the threat of MDR and XDR TB

Realising the threat posed by the potential emergence of the drug resistant TB to the goal of TB control, RNTCP has developed a multi-faceted strategy to address the issue. The problem of MDR was recognised and an action plan component was built into the RNTCP Phase II Project Implementation Plan (2006-2011). This envisages, by 2010, development of a network of RNTCP accredited quality assured Intermediate Reference Labs (IRLs) for culture and DST and identification of DOTS plus treatment sites in each large state capable of enrolling and providing care and management of at-least 5,000 new MDR-TB cases a year.

In 2007, RNTCP advocated a response which was developed by effectively involving all the stakeholders through a series of consultative meetings to counter the potential threat of MDR and XDR TB. The following are components of the response:

MDR prevention through sustained high-quality DOTS implementation

Studies in pilot areas have shown that DOTS has been successful in reducing the prevalence of drug resistant TB on a community level in Mexico, Peru, and India

STF Chairman giving DOT to MDR-TB patient at DOTS Plus site in Gujarat

(MDP area). The single most efficient and cost effective strategy for dealing with MDR and XDR TB is prevention through proper treatment by all providers in the public and private sector, as per the International Standards for TB Care. Some of the key challenges faced by the programme are:

- Reducing initial default and default from treatment.
- Ensuring accurate categorisation of previously treated patients as Category II.
- Ensuring reliable DOT throughout treatment.
- Improve re-treatment success through intensified support, supervision, and monitoring of DOT in category II patients.
- Improving Public-Private Mix (PPM) activities and uptake of DOTS by private sector and medical colleges.
- Promote the endorsement and application of the International Standards of TB Care through the IMA and other professional societies, particularly chest physicians, to reduce the generation of drug-resistance, especially in the private sector.

Improve laboratory capacity

For diagnosis of MDR-TB it is essential to establish a network of laboratories, across the country, capable of conducting quality-assured culture and Drug Sensitivity Testing on patients suspected of suffering from MDR-TB. It has been planned to have one RNTCP-accredited IRL for culture and DST in each large state by 2009-10, for the laboratory diagnosis of MDR-TB.

Currently IRLs in the states of Gujarat, Maharashtra, Andhra Pradesh, Haryana, West Bengal, Tamil Nadu, Kerala, Rajasthan and Chhattisgarh are in the process of accreditation. Equipment have been supplied to another 13 states.

Besides the IRLs the programme is also promoting and facilitating the accreditation of medical colleges to conduct quality-assured culture and DST. The possibility of involving private culture and DST laboratories is also being explored.

Prevention of XDR-TB

Effective treatment of MDR-TB burden through DOTS Plus – The accurate diagnosis and effective treatment of patients with MDR-TB is crucial to improve treatment outcomes, reduce death, and prevent the generation of XDR-TB. Like all drug-resistant TB, XDR-TB is man-made. Treatment of MDR-TB in DOTS Plus pilot programmes around the world has shown generally good treatment outcomes, much better than historically reported for treatment of MDR-TB outside of structured treatment programmes. RNTCP has a GLC approved DOTS Plus pilot site at LRS Hospital, New Delhi. Community-based Category IV treatment for MDR-TB cases has been initiated in the states of Gujarat and Maharashtra. These services will be expanded across the country in a phased manner so as to create a nation-wide network of at least 25 DOTS Plus sites, capable of enrolling, and providing care and management for at least 5,000 “new” MDR-TB cases each year.

The programme will ensure a stable supply of quality assured second-line drugs to all RNTCP DOTS Plus sites using both Government of India and Green Light Committee procurement mechanisms.

A consultative meeting of TB experts was conducted at TRC, Chennai to discuss the problem, prevention and management of MDR-TB and XDR-TB outside the programmatic conditions. The outcome of the meeting was a consensus statement on the management of MDR-TB for all health care providers outside the programme settings. This document is placed in the public domain via the RNTCP website. States have been requested to disseminate this guidance especially targeting medical colleges, public and private sector hospitals currently engaged in managing patients suspected to have MDR-TB. States have also been requested to monitor the adherence of health care providers in all sectors to this guidance document.

Evaluate the extent of the threat of XDR-TB and second line drug resistance

Although XDR-TB has been reported in India, the exact magnitude of the problem needs to be ascertained. In order to estimate the prevalence of XDR-TB the programme is undertaking second line DST for MDR-TB patients from DOTS Plus sites at Gujarat and Maharashtra. Surveillance for second line drug resistance is being conducted on isolates collected from Gujarat (2005) and Maharashtra (2005-2006) drug resistance surveys.

Capacity of the National Reference Laboratories (NRLs) namely NTI Bangalore; LRSI New Delhi and JALMA Agra is being built for conducting second line DST.

Planning is underway for a rapid case-control study of XDR-TB cases identified from the Gujarat DRS survey, to evaluate causes of XDR-TB.

Review the supply and availability of second line anti-TB drugs in India

As XDR-TB is man made, the supply and use of second-line anti-TB drugs has become a matter of urgent public health importance. The irrational and indiscriminate use of second line drugs by the private sector and medical colleges needs to be, and can be, stopped now, with the result of 'turning off the tap' of XDR-TB creation in India.

A survey of the availability, supply and use of second line drugs for TB treatment in medical colleges and the private sector will be conducted to understand the extent of use and misuse of such drugs.

The challenge of XDR-TB and options for XDR-TB prevention are being discussed with National and State officials at all potential forums.

The possibility of introducing a system of notification of MDR-TB patients who require treatment with second line anti-TB drugs and a regulatory mechanism, supported by professional medical associations, to promote rational use of second line anti-TB drugs is being explored.

Sustained political and administrative commitment

Sustained political and administrative commitment is essential to establish and maintain the other four components. It requires both long-term investment and leadership in ensuring an appropriate environment for integrating the management of MDR-TB into the basic RNTCP activities.

Chief Minister of Haryana inaugurating State TB Training Centre and drug store

CONSENSUS STATEMENT

Based on the review of published evidence, international and national guidelines, and the experience of participants and their institutions in the management of multi-drug resistant TB (MDR-TB) and extensively drug resistant TB (XDR-TB), the following consensus was reached.

Epidemiology

As per the estimates from the State representative Drug Resistance Surveillance (DRS) survey in Gujarat and various district level DRS studies, the prevalence of MDR-TB in new smear positive pulmonary TB (PTB) cases is ≤3% and 12 to 17% amongst smear positive previously treated PTB cases. Review of studies with representative samples does not indicate any increase in India of the prevalence of drug resistance over the years.

Although isolated reports, both published and unpublished, indicate the existence of XDR-TB in the country, it is not possible as yet to estimate its magnitude and distribution from the available data.

Definitions

MDR-TB is defined as resistance to isoniazid and rifampicin, with or without resistance to other anti-TB drugs.

XDR-TB is defined as resistance to at least Isoniazid and Rifampicin (i.e. MDR-TB) plus resistance to any of the fluoroquinolones and any one of the second line injectable drugs (amikacin, kanamycin or capreomycin).

Prevention of MDR-TB and XDR-TB

The use of inadequate regimens and the absence, or inappropriate application, of directly observed treatment can lead to the development of drug resistance and potentially to an increase in drug resistance levels amongst the community. The implementation of a good quality DOTS programme will prevent the emergence of MDR and XDR TB in the community. Therefore, the highest priority is to further improve the quality and reach of DOTS services in the country. For this, all health care providers managing TB patients need to be linked to RNTCP and operational challenges in implementing DOTS need to be addressed. The proportion of TB patients being treated outside the DOTS strategy needs to be minimised. The International Standards of TB Care need to be used by RNTCP and professional medical associations as a tool to improve TB care in the country. The fluoroquinolone group of drugs is not as yet recognised, nor recommended, as first line anti-TB drugs, and their use should be restricted only to the treatment of confirmed MDR-TB cases.

Management of MDR-TB

National guidelines and plans for scaling up management of MDR-TB have been developed under RNTCP. In the interim, while RNTCP DOTS Plus services are being expanded across the country, all health care providers in the public and private sector managing MDR-TB cases, need to adhere to the following:

- MDR-TB management to be preferably undertaken only at selected health institutions with experience, expertise and availability of required diagnostic and treatment facilities.
- Diagnosis of MDR-TB
  - Drug resistance may be suspected based on history of prior treatment (e.g. smear positive case after repeated treatment courses, Cat II failure etc.) and/or close exposure to a possible source case confirmed to have drug-resistant TB.
  - For patients in whom drug resistance is suspected, diagnosis of MDR-TB should be done through culture and drug susceptibility testing from a quality-assured laboratory.
- Interpretation of DST Results
  - Drug susceptibility test results of the first line anti-TB drugs like pyrazinamide, streptomycin, and ethambutol should be interpreted with caution due to the poor reproducibility of these results even under optimal laboratory conditions.

Multi-drug resistant and Extensively drug resistant TB in India

Consensus statement on the problem, prevention, management and control

From the consultative meeting of national experts organised by the TB Research Centre, ICMR, Govt. of India, on 14-15 September 2007, at Chennai

- Drug Susceptibility Test (DST) results of second line anti-TB drugs[1] should be interpreted with great caution due to limited capacity of laboratories, absence of quality-assurance, and lack of standardised methodology.

- Treatment regimen
  - All relevant investigations to be performed prior to treatment initiation.
  - Preferably the standardised regimen as recommended in the national DOTS Plus guidelines should be used [6(9) Km Ofx Eto Cs Z E / 18 Ofx Eto Cs E][2].
  - If results of second line DST from an accredited laboratory are available, an individualised regimen may be used in such patients after obtaining a detailed history of previous anti-TB treatment.
- Duration of treatment
  - At least six months of Intensive Phase (IP) should be given, extended up to nine months in patients who have a positive culture result taken in fourth month of treatment.
  - Minimum 18 months of Continuation Phase (CP) should be given following the Intensive Phase.
- Follow-up schedule
  - Smear examination should be conducted monthly during IP and at least quarterly during CP.
  - Culture examination should be done at least at 4, 6, 12, 18 and 24 months of treatment.
  - Relevant additional investigations should be performed as indicated.
- Treatment adherence and support
  - All patients initiated on treatment and their family members should be intensively counselled prior to treatment initiation and during all follow-up visits.
  - To reduce the risk of development of resistance to second-line anti-TB drugs and promote optimal treatment outcomes, all efforts should be made to administer treatment under direct observation (DOT) over the entire course of treatment.
  - If DOT is not possible, attempts to ensure treatment adherence should be made by:
    - checking empty blister packs; and
    - follow-up visits at least every month.
- Documentation of treatment
  - Health care facilities/practitioners managing MDR-TB patients should maintain a systematic record of treatment regimen, doses, duration, side-effects, investigation results and treatment outcome for all patients initiated on second line treatment.

Public Health Responsibilities of Health Care Providers

- Health care facilities/practitioners managing confirmed MDR-TB patients should inform their respective District TB Officer regarding treatment initiation and outcome of all MDR-TB cases.
- Prior to treatment initiation and on all follow-up visits the patient and family members should be counselled on all aspects of MDR-TB.
- All household contacts of the MDR-TB patients should be screened for active TB disease.
- Infection control measures
  - All large health care facilities need to have an infection control (including air-borne infection) plan and a team for implementation of measures to prevent nosocomial transmission of TB and other air-borne infections.
- Statements to the press/media on MDR-TB and XDR-TB should be made with extreme caution and after requisite verification and authentication.

[1] Fluoroquinolones (Ciprofloxacin, Ofloxacin, Levofloxacin, Moxifloxacin, Gatifloxacin, Sparfloxacin, Pefloxacin); Kanamycin, Amikacin, Capreomycin, Ethionamide, Prothionamide, Cycloserine and PAS

[2] Km=Kanamycin; Ofx=Ofloxacin; Eto=Ethinamide; Cs=Cycloserine; Z=Pyrazinamide; E=Ethambutol

Contribute to Health System Strengthening

Collaboration of RNTCP Activities within NRHM

RNTCP is actively participating to improve management, service delivery and share innovation strengthen health systems. It is helping in efforts to improve systems and policy, human resources and finances. The National Rural Health Mission is a mechanism which has provided an "umbrella" in all states with the repositioning of RCH and National Disease Control Programmes in integrated State/District Health Societies. The gaps in infrastructure and service delivery in National programmes are being addressed through "Additionalities under NRHM".

The convergence of the TB control programme with NRHM has taken place in all the states and Union territories of the country with the merger of State TB Control Society (STCS) into the "***State Health Society" (SHS*)** and there is no change in implementation of RNTCP.

RNTCP is implemented through the general health system. The overall responsibility of implementing RNTCP activities rests with the staff under general health services.

This State TB cell functions in close collaboration with the ***State Programme Management & Support Units (SPMSU)*** wherever the PMSU have been created. The SPMSU will have experts in areas of human resource, M&E, Behaviour Change Communication (BCC), and other technical areas. *This pool of skilled professionals like MBA, CA, MIS specialist and other RCH consultants will provide specific programme support including TB control programme.*

Under the mission, in order to reflect the requirements of the state in a consolidated ***"Programme Implementation Plan" (PIP),*** the states have incorporated the various TB control activities and budgeted in Part 'D' of the PIP which were duly reviewed by TB division during the appraisals of the PIP. The existing District Annual Action Plan/State Annual Action Plan formats of RNTCP have been incorporated in the NRHM State PIP.

The untied funds made available at the PHC/sub centre levels under NRHM are being utilised for some of the TB control activities such as provision of clean drinking water to the TB patients to take medicines, for transportation of sputum samples in difficult areas, and providing storage area for patient wise boxes.

All government health facilities, sub centres, and increasing number of community volunteers including Anganwadi workers, private practitioners and NGOs have been involved in provision of DOTS. Accredited Social Health Activist (ASHA) workers under NRHM are being trained to participate as DOT providers in rural areas.

Since RNTCP is implemented through the general health system, it is important that all Medical Officers and other staff in the field are trained, are familiar with the provision under RNTCP and fully utilise diagnostic and treatment services under RNTCP for providing TB services to the community in patient friendly environment. Community DOT providers, sputum collection centres are being promoted for catering to all sections of society even in the remote and hard to reach areas.

Under NRHM, the quarterly reporting format devised by the Central TB Division with indicators on referrals, case findings and treatment success rate are being submitted to the state Mission Directors for monitoring the programme implementation.

The forthcoming National Urban Health Mission (NUHM) envisages to provide accessible and equitable health care services to the underprivileged urban slum dwellers and urban poor. The proposed upgradation of the urban health infrastructure and provision of additional manpower (such as Urban Social Health Activist (USHA) at the Urban Health Centres (UHCs)

ASHA worker in Rajasthan interacting with team of experts

will be utilised by RNTCP and is expected to improve the TB referral, diagnostic and treatment services in the urban areas.

Human Resource Development

Human Resource Development (HRD) under RNTCP has adopted a more holistic approach. It includes management of personnel, while maintaining constant standards of training, leading to professional competency in TB control activities.

The programme has a mandate to ensure that at least 80% of key health personnel are trained at all times. They include the Medical Officer (MO), Senior Treatment Supervisor (STS), Senior TB Laboratory Supervisor (STLS) and Laboratory Technician (LT). These are continuous activities performed at state and district level. Newer areas for training include Medical College personnel, NGOs and Private Practitioners. The treatment functionaries are the DOT providers who are provided modular training and on-site updates during the course of supervision.

The overall aim of Human Resource Management is to improve the supervisory and managerial capacity of programme personnel. To ensure optimal utilisation of available staff to achieve maximum advantage for the programme, the following strategies are adopted:

- RNTCP encourages continuity of key staff such as STO, DTO and MO-TC.
- The centre regularly interacts with the states ensuring minimal vacancies in key posts. Such advocacy with states helps in establishing healthy interaction thus providing political and administrative commitment to the programme.
- Contract renewal of contractual staff is linked to their performance.
- Exchange of experiences amongst different programme managers is promoted during evaluations and meetings.

RNTCP undertakes a range of activities in HRD

Establish and improve existing training programmes

RNTCP has developed a series of modular training courses with printed material for all levels of staff ranging from the State TB Officers to the community DOT providers. These trainings are conducted at various venues.

- The Central Institutes provide training for State TB Officers, District TB Officers, faculty of State TB and Demonstration Centre (STDC) and Master trainers. The Central Institutes are:
  - National TB Institute, Bangalore, Karnataka
  - TB Research Centre, Chennai, Tamil Nadu
  - Lala Ram Swarup Institute of TB and Respiratory Diseases, Delhi.
- State Tuberculosis Training & Demonstration Centres (STDCs) provide training for Medical Officer TB Control, STS and STLS.
- The district provides training for MO, LT, MPWs and Community DOT providers.

To date at least 5,50,000 individuals involved in RNTCP activities have been trained as per documentation.

Training modules have been updated and newer guidelines, modules and training programmes have been added to the existing training packages. Modules currently being used are:

- RNTCP Laboratory Network Guidelines for Quality Assurance of Smear Microscopy
- Strategy Document for Supervision and Monitoring of RNTCP
- RNTCP DOTS Plus guidelines
- RNTCP DOTS Plus modules for Medical Officers and Paramedical staff
- Guidelines for the involvement of NGOs and Private Practitioners in RNTCP
- Tribal Action Plan for RNTCP II
- Environmental and Bio-Medical Waste Management Plan for RNTCP II
- Financial Management guidelines for State and District societies
- Training module for Medical Practitioners

Jayaram, STS Gaywathi TU, exhibiting IP and CP components in PW boxes

- Training modules for Medical Officers, STS, STLS and counsellors on TB/HIV coordination
- Improving interpersonal communication skills in RNTCP training
- Standard operating procedure manual for state and district drug stores
- Update training on Paediatric guidelines and paediatric patient wise boxes.

There are three tiers of training which address different needs of the staff providing RNTCP services:

Initial RNTCP training

This includes all induction trainings in RNTCP of newly placed staff or replacement staff following staff turnover. It also includes the initial training of NGO and private practitioners on RNTCP, in addition to the basic modular trainings for Medical Officers, STS, STLS, LTs and MPWs.

Re-training

These trainings would be mainly for individuals who have already received initial RNTCP training, but during supervision have been identified as requiring re-training on basic RNTCP activities.

Updates on new activities and initiatives

As the RNTCP introduces new activities and initiatives, it is imperative that the field staff are updated on these areas. These updates are given mainly by utilising time under routine activities like regular programme review meetings such as the monthly district level meeting of the DTO, MO-TCs, STS and STLS and the quarterly state level review meetings.

Updating of training material for RNTCP

Over the year, new initiatives have been taken by RNTCP to achieve MDGs relating to TB. This includes TB/HIV collaborative activities, DOTS Plus for management of MDR-TB and strengthening ACSM component. A workshop was organised to review RNTCP training activities in Chennai in February, 2008 with the objective to review the training material to identify gaps and work towards developing modified training material.

Role of medical colleges in RNTCP training

Involvement of medical colleges in the RNTCP is a high priority. A national task force and five zonal task forces (ZTFs) have been formed for their effective involvement in RNTCP. Within each zone, nominated medical colleges have been given the responsibility to function as nodal centres. All medical colleges have formed State Task Forces (STFs). In each medical college, there is a core committee to arrange for training and oversee the functioning of the microscopy/treatment centre in their respective institutions. Continuing success of RNTCP requires involvement of all large health care providers including medical colleges. Professors of medical colleges have an important role in TB control as opinion leaders and trendsetters. By teaching and practicing DOTS they act as role models for practicing physicians.

Co-ordination of TB-related and HIV/AIDS training with the National AIDS Control Organisation

Central TB Division, in collaboration with NACO, have developed a range of training packages which address the issues of TB-HIV. These training courses are targeted at various levels of health workers from MOs to ICTC counsellors. Thus HIV/AIDS programme staff are being trained on RNTCP and vice versa. Training is also provided to NGOs who are involved in TB related and/or HIV/AIDS activities.

Data management training

The programme produces invaluable data at all levels. It is essential to ensure that districts and states know how to analyse and utilise their data for the betterment of the programme. Trainings have been conducted in many states by the centre. In addition, a higher level Management of Information for Action (MIFA) training targeted at changing attitudes and practices related to RNTCP information systems and its use for decision-making, has been completed in Rajasthan and Andhra Pradesh. Feedback is encouraging, thus enabling more interactive and participative sessions with the states.

New initiatives and future plans

A large number of medical personnel of NGOs and Private Practitioners (PPs) are being sensitised either through the Indian Medical Association (IMA) or at their institutions/clinics. To impart adequate training with quality, an RNTCP training module has been developed to specifically meet the needs of this group of doctors.

A method to establish areas of weaknesses of Medical Officers in RNTCP, through tests and evaluations is being drafted. This will enable identification of issues that need to be addressed during re-training.

Increased efforts will be required to ensure that the pre-service training for doctors, nurses, MPHS/MPW and Anganwadi Workers is consistent with RNTCP. Also, activities directed at health care providers outside of the public sector need to be strengthened. Specific training on management information systems (MIS) is needed for the RNTCP officers at the State and district levels.

Engage all Health Care Providers

Public Private Mix

The RNTCP employs the Public Private Mix (PPM) which is the strategy to diagnose and treat TB patients reporting to all sectors of health care under RNTCP through a mix of different types of health care providers.

NGOs

Currently, 2946 NGOs and 17,695 private practitioners are working under RNTCP under the GoI approved NGO/PP guidelines. Organisations like REACH (Chennai), World Vision, mission hospital associations like Catholic Bishop's Conference of India (CBCI), Christian Medical Association of India (CMAI), Christian Health Association of India (CHAI), R.K. Mission, etc. are collaborating with RNTCP at national and state levels. An NGO, 'SHISH' is managing seven TUs in two districts in West Bengal in the difficult riverine belt of Sunderbans. INTERAIDE, Mumbai and Mahavir Hospital, Hyderabad are running 'Urban DOTS' projects in the slums areas to increase the access of DOT services for the poor people.

Corporate sector

RNTCP has had interactions with major organisations of the corporate houses like Confederation of Indian Industries (CII), World Economic Forum, Federation of Indian Chamber of Commerce and Industry (FICCI) and the trade unions. An interactive workshop with corporate companies like National Thermal Power Corporation (NTPC), Jubilant Organosys, Becton Dickinson India Pvt. Ltd. (BD India), etc. was held in Delhi at the headquarters of the CII following which companies like BD India, have become involved in RNTCP activities. Currently over 150 corporate health facilities are involved in RNTCP. The Steel/Aluminium Plants, Cement Factories, National Thermal Power Corporation, Petrochemicals Industries, Bharat Heavy Electricals Limited (BHEL) have Microscopy centres. Jute mills, mines and sugar mills have DOT centres. The tea gardens in Jalpaiguri, West Bengal and Dibrugarh, Assam have Microscopy and DOT

Fig. 6 : NGO status (state-wise) as per the 4th quarter, 2007 (States with less than 60 NGOs have not been shown)

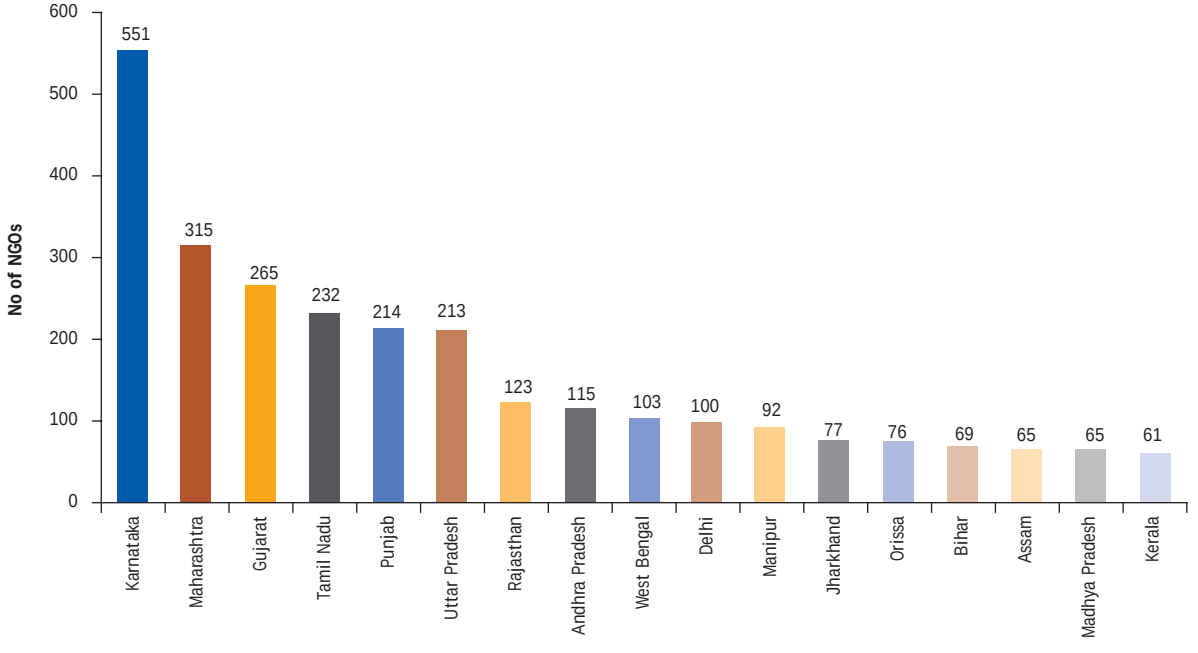
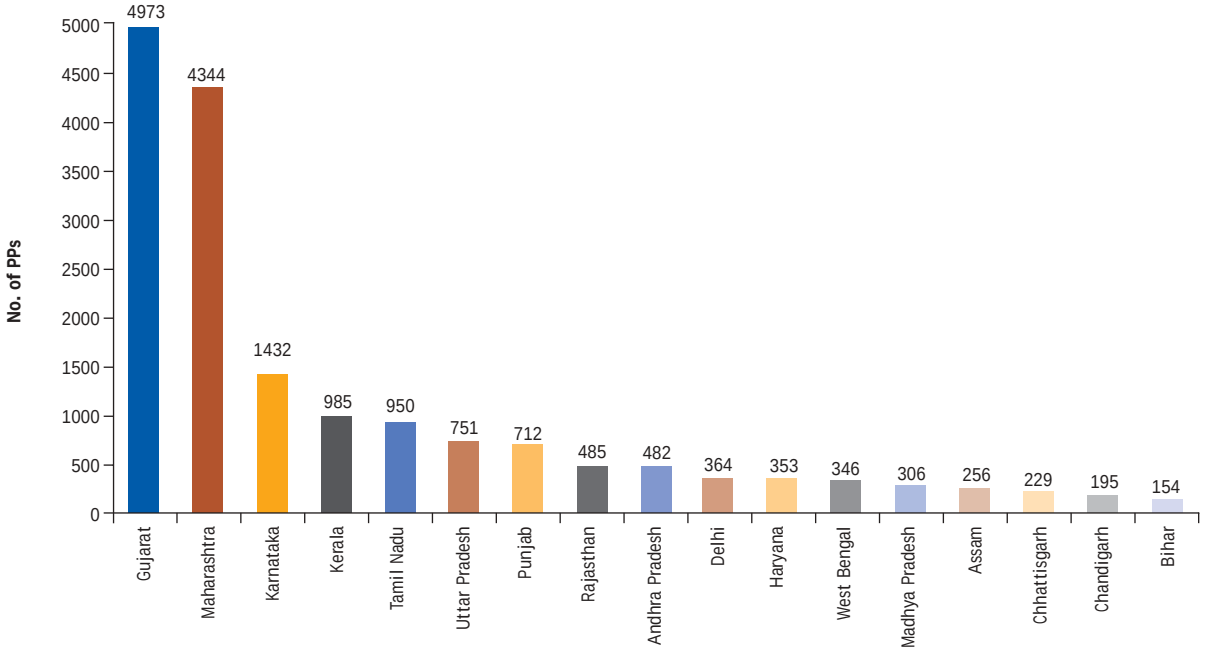


Fig. 7: PP status (state-wise) as per the 4th quarter, 2007 (States with less than 150 PPs have not been shown)



centres in the state health facilities. Nehru Shatabdi Chikitsalay, Jayant, a multi-specialty hospital of the Northern Coalfields Limited in Sidhi district of Madhya Pradesh is a DMC.

Public sector

All the 16 centrally owned ESI hospitals, Zonal Railway Hospitals, Coal, Steel and mines health facilities, Port trust hospitals, CGHS hospitals and 150 corporate hospitals are involved in RNTCP services. Health facilities of BHEL, NTPC, Indian Oil Corporation Limited (IOCL), Steel Authority of India Limited (SAIL), Coal India have DOT services in their health facilities. The Army Hospital at Namkum, Ranchi is running a DMC. All the Cantonment hospitals are being involved in RNTCP.

GFATM round 2 urban TB projects at Interaide, Mumbai, Bhagwan Mahavir Medical and Research Centre (BMMRC), Hyderabad, SWI, Varanasi and Madhya Pradesh Voluntary Health Association (MPVHA), Indore have completed three years of project with increase in case detection at all the sites as a result of improved quality and reach of RNTCP to special groups like slum dwellers and migrants, through more "patient friendly" treatment observation, involvement of private and NGO sectors and IEC. In the third year there was an addition of TB-HIV component at Mumbai which has the best slum network among all the project sites.

Urban TB for slum dwellers

On an average about one-fourth of the population of large Indian cities resides in slums. Conditions in slums favour the transmission of TB and therefore the incidence of TB is expected to be higher in slum population. The nationwide ARTI survey (2000-2003) showed that the incidence of TB was significantly higher in the urban population with a large variation across and within the four zones of the country. Recognising the problem and impact of TB on urban slum population,

Meeting of IMA, Indore, Madhya Pradesh

RNTCP intends to provide greater levels of access to its services to the urban slum population.

As a step in this direction 20 urban cities with more than one million population are being monitored by Central TB Division to do micro planning for the urban poor wherein the slum strategy is prepared by each site to improve the access of DOT services for the urban poor.

Indian Medical Association (IMA)

The IMA has endorsed the International Standards of TB care guidelines and disseminated it widely in the country. It has supported the formation of a Coalition of Professional Bodies against TB (IMPACT) at the National level. Its members include: Association of Physicians of India, Indian Academy of Paediatrics, National College of Chest Physicians, Indian Chest Society, and Federation of Family Physicians Association of India.

IMA has a wide base and a network of 1,60,000 medical practitioners (PPs). It has the potential to penetrate the private sector, including non-government organisations (NGOs), corporate sector, medical colleges, etc. Keeping this in mind it has been given a five year - **'Umbrella model'** project under GFATM Round 6. In this project it will carry out intensified activities for the involvement of Private Practitioners in five states and one union territory and will cover 40.4 crore people in 167 districts with 532 IMA branches having more than 55,000 members.

PPM tools

Tools for PPM are specially made to help the NGOs, PPs and other partners. The Public Private Mix advocacy kit (flipbooks, stickers, display boards, posters etc.) developed for facilitating interaction with Private

IMPACT meeting in progress

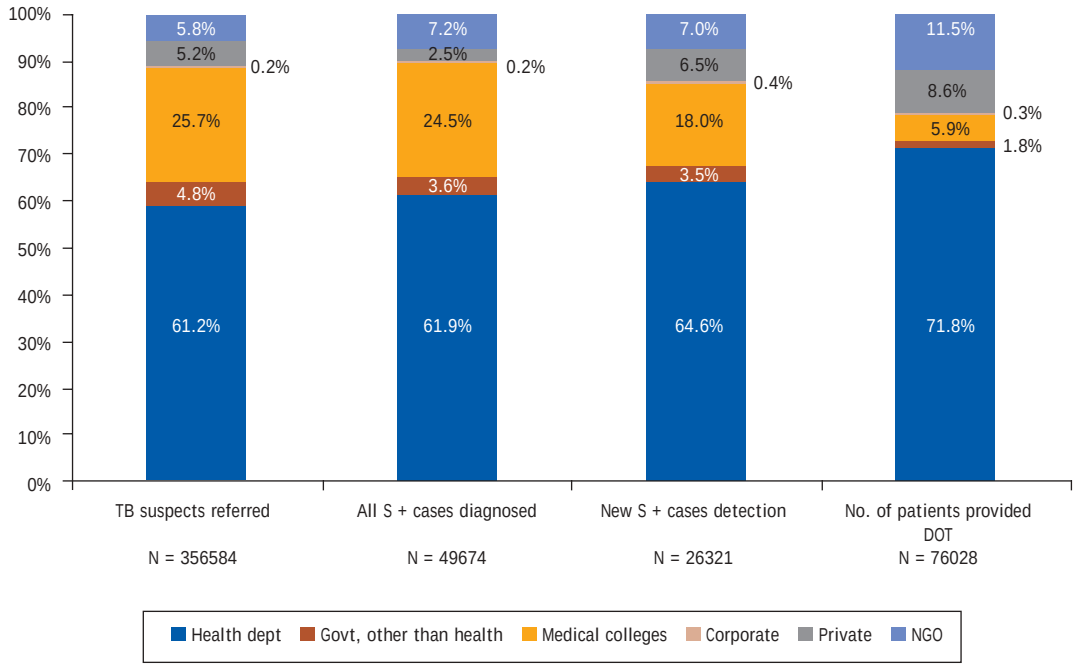
Practitioners for community involvement has been disseminated widely.

The Central TB Division (CTD), in August 2003 launched a pilot project of Public-Private Mix (RNTCP-PPM) in fourteen urban areas in the country. Medical consultants (WHO-PPM) were posted at these sites. Fourteen pilot sites were chosen for trying out PPM. These pilot sites are large urban areas in 14 different states. These urban areas include Thiruvananthapuram (Kerala), Chennai (Tamil Nadu), Bangalore (Karnataka), Bhopal (Madhya Pradesh), Bhubaneswar (Orissa), Ranchi (Jharkhand), Patna (Bihar), Calcutta (West Bengal), Mumbai-Pune (Maharashtra), Ahmedabad (Gujarat), Jaipur (Rajasthan), Lucknow (Uttar Pradesh), Chandigarh and New Delhi.

Additional recording and reporting formats were developed and used in these 14 sites to measure the contribution of PPM DOTS. The project came to an end in December 2007. But the additional recordings in these

NGO Guidelines | PP Guidelines | RNTCP Advocacy Kit | PP Training Module

Fig. 8: 14 intensified urban PPM districts (3rd qtr 2006 to 2nd qtr 2007): Summary of contribution by different health sectors



sites continued in the simplified reporting formats from the TUs and the districts.

The PPM providers have been grouped into six categories:

1. Health department facilities (H)
2. Government facilities outside health department (G)
3. Medical Colleges (M)
4. Corporate sector health facilities (C)
5. Private providers (P)
6. NGOs (registered Non-Government Organisations) (N)

A National Consultation on Revision of NGO/PP Guidelines was held on **29-31 January 2008 at LRS Institute, Delhi** with the following objectives:

- To review the progress in involvement of NGO/PP in RNTCP since the formulation of schemes and share experiences,
- To review the present NGO/PP schemes, identify constraints and suggest improvements,
- To recommend new schemes to improve the collaboration with other sectors in all aspects of RNTCP implementation

The Consultation was held to have a consensus on the revised schemes in consultation with the stakeholders by sharing experiences from currently involved NGOs/PPs; NGOs/PPs who have discontinued their services under RNTCP due to operational problems with the existing schemes; NGOs/PPs who have not come forward due to non-flexibility in the present schemes. New schemes were also discussed to include private providers to facilitate the Culture and DST in private labs, sputum collection centres and 'umbrella NGOs'.

Involvement of Medical Colleges in RNTCP

Medical colleges play an important role in supporting any health programme in India. Medical college faculties have an important role in TB control as opinion leaders and trendsetters, teachers imparting knowledge and skills, partners in sustaining the programme by teaching and practicing DOTS and as role models for practicing physicians. Recognising the significant role medical colleges can play, the RNTCP envisaged activities pertaining to training and teaching, service delivery, advocacy and operational research as priority areas for collaboration with the medical colleges.

Task Force

For effective implementation of the programme in medical colleges, the programme functions through a Task Force mechanism at the National, Zonal and State levels. By February 2006, State Task Forces were formed in all 27 States/UTs with medical colleges.

Zonal Task Force

Zonal task forces have been constituted in five zones of the country, catering to the medical colleges located in the north, south, east, west and north east zones of the country. RNTCP has established seven nodal centres for medical college involvement across the country at:

1. AIIMS (New Delhi)
2. PGI (Chandigarh)
3. SMS Medical College (Jaipur)
4. LTM Medical College (Mumbai)
5. Guwahati Medical College (Guwahati)
6. CMC (Vellore)
7. R G Kar Medical College (Kolkata).

These nodal centres are actively involved in the Zonal Task Forces and in the National Task Force.

Workshops for Task Force

By holding annual workshops at the zonal and national level, RNTCP provides a platform for the medical college faculty for sharing experiences and for streamlining the bottlenecks identified in effective collaboration.

This year also workshops were held between August and September 2007. Five zones which had highly successful and well-attended zonal task force (ZTF) workshops are:

Chhatrapati Shahuji Medical University, Lucknow (North Zone)
St. John's Medical College, Bangalore (South Zone)
B J Medical College, Pune (West Zone)
Patna Medical College and Hospital (East Zone)
Regional Institute of Medical Sciences, Imphal (North East Zone).

Each ZTF workshop included an open scientific update session, which was open to all medical college faculty and residents of the host college and other local practitioners, in addition to the ZTF participants from all medical colleges in the zone. The ZTF workshops included group work sessions to evolve various policy and implementation aspects of Medical College involvement in RNTCP, and the evolution of State-specific action plans with timelines. Representatives of all Medical

Workshop of ZTF, Bangalore (South)


Workshop of ZTF, Patna (East)


Workshop of ZTF, Lucknow (North)

Workshop of ZTF, Pune (West)

Workshop of ZTF, Imphal (North-East)

Colleges in the zone, the STF Chairpersons, STOs and other programme officials actively participated in these zonal workshops.

The sixth National Task force CME cum workshop was held at AIIMS, New Delhi from 29th Oct-31st Oct, 2007. The theme of the CME was "Drug Resistant TB". The resource persons for the CME were eminent speakers from the medical colleges across the country, Central TB Division (GoI), National Institutes and WHO- India. Over 200 participants from the various medical colleges of Delhi, from the states, private practitioners, under-graduate and post graduate students of the various medical colleges of Delhi. Annual reports of the national and zonal task forces were presented in the workshop.

NTF recommendations

This year the NTF came up with recommendations on six priority areas relating to role of medical colleges in promoting amongst students and peer faculty the use of ISTC, NTF Consensus Statement on use of second line anti-TB drugs and RNTCP patient management guidelines. These recommendations were on:

1. Effective involvement of all departments of Medical Colleges
2. Operational research activities to be conducted by medical colleges
3. Identification of constraints and recommendations to address them
4. Medical College Quarterly Reporting formats and the mechanisms for compilation at various levels and feedback
5. Role of medical colleges towards strengthening M TB culture & DST network
6. On approaches to develop infection control measures in hospital settings.

The National task force also endorsed the RNTCP Chennai consensus statement on MDR and XDR TB.

Progress after inclusion of medical colleges

- As of December 2007, more than 250 Medical Colleges across the country are involved in RNTCP and approximately 10% of the sputum positive cases in a quarter are diagnosed at the medical college DMCs.
- RNTCP has sanctioned more than 141 medical officers, 212 LTs and 209 TBHVs on contractual basis to facilitate co-ordination and service delivery at the medical colleges.
- More than 250 medical college faculties have been trained at the National Institutes as "master trainers" and they are undertaking training activities at the state level and locally in the medical colleges.
- Zonal and state TB-HIV collaborative activities at the medical colleges which have ICTC and ART centres are also receiving priority and cross referrals are monitored routinely.

Operational research

Operational Research (OR) has also been an area of priority under RNTCP, and Medical Colleges have been encouraged to participate in OR projects and to submit OR proposals for RNTCP funding. Operational research committees have been formed in all zones and states. During the year 2006-2007 approximately 41 such grants have been sanctioned by the STFs.

Medical colleges are also participating in various state level RNTCP evaluations, and during the year about 112 medical colleges have reported participated in these evaluations.

Efforts are also underway in ensuring involvement of medical colleges for the multitude of challenges being faced by RNTCP especially in areas such as advocacy, establishment of a network of laboratories for M TB culture and DST, and for the management of drug resistant forms of TB.

INTERNATIONAL STANDARDS FOR TB CARE

The International Standards for Tuberculosis Care (ISTC) describe an internationally accepted level of care that all practitioners, public and private, should follow in dealing with people who have, or are suspected of having, tuberculosis. The Standards are intended to facilitate the effective engagement of all care providers in delivering high-quality care for patients of all ages, including those with sputum smear-positive, sputum smear-negative, and extrapulmonary tuberculosis, tuberculosis caused by drug-resistant organisms, and tuberculosis combined with HIV infection.

The Standards have been developed by the Tuberculosis Coalition for Technical Assistance (TBCTA) with funding support from the US Agency for International Development. ISTC emerged after a year-long inclusive process guided by a 28-member steering committee that included individuals representing a wide variety of relevant perspectives on tuberculosis care and control. In addition, the document was presented at various public forums with an open invitation for comments. India was intimately involved in the development of the ISTC and a representative of the Indian Medical Association (IMA) was a member of the steering committee that supervised the development of the ISTC document. The RNTCP of the Government of India conforms to the standards prescribed in the ISTC.

Standards for Diagnosis

Standard 1. All persons with otherwise unexplained productive cough lasting two–three weeks or more should be evaluated for tuberculosis.

Standard 2. All patients (adults, adolescents, and children who are capable of producing sputum) suspected of having pulmonary tuberculosis should have at least two, and preferably three, sputum specimens obtained for microscopic examination. When possible, at least one early morning specimen should be obtained.

Standard 3. For all patients (adults, adolescents, and children) suspected of having extrapulmonary tuberculosis, appropriate specimens from the suspected sites of involvement should be obtained for microscopy and, where facilities and resources are available, for culture and histopathological examination.

Standard 4. All persons with chest radiographic findings suggestive of tuberculosis should have sputum specimens submitted for microbiological examination.

Standard 5. The diagnosis of sputum smear-negative pulmonary tuberculosis should be based on the following criteria: at least three negative sputum smears (including at least one early morning specimen); chest radiography findings consistent with tuberculosis; and lack of response to a trial of broad spectrum antimicrobial agents. Because the fluoroquinolones are active against M. tuberculosis and, thus, may cause transient improvement in persons with tuberculosis, they should be avoided. In persons with known or suspected HIV infection, the diagnostic evaluation should be expedited.

Standard 6. The diagnosis of intrathoracic (i.e. pulmonary, pleural, and mediastinal or hilar lymph node) tuberculosis in symptomatic children with negative sputum smears should be based on the finding of chest radiographic abnormalities consistent with tuberculosis and either a history of exposure to an infectious case or evidence of tuberculosis infection (positive tuberculin skin test or interferon gamma release assay). For such patients, if facilities for culture are available, sputum specimens should be obtained (by expectoration, gastric washings, or induced sputum) for culture.

Standards for Treatment

Standard 7. Any practitioner treating a patient for tuberculosis is assuming an important public health responsibility. To fulfill this responsibility the practitioner must not only prescribe an appropriate regimen but also be capable of assessing the adherence of the

patient to the regimen and addressing poor adherence when it occurs. By doing so, the provider will be able to ensure adherence to the regimen until the treatment is completed.

Standard 8. All patients (including those with HIV infection) who have not been treated previously should receive an internationally accepted first line treatment regimen using drugs of known bioavailability. The initial phase should consist of two months of isoniazid, rifampicin, pyrazinamide and ethambutol. The preferred continuation phase consists of isoniazid and rifampicin given for four months. Isoniazid and ethambutol given for six months is an alternative continuation phase regimen that may be used when adherence cannot be assessed, but it is associated with a higher rate of failure and relapse, especially in patients with HIV infection. The doses of anti-tuberculosis drugs used should conform to international recommendations. Fixed-dose combinations of two (isoniazid and rifampicin), three (isoniazid, rifampicin, and pyrazinamide), and four (isoniazid, rifampicin, pyrazinamide, and ethambutol) drugs are highly recommended, especially when medication ingestion is not observed.

Recommended treatment for persons not treated previously

Ranking	Initial phase	Continuation phase
Preferred	INH, RIF, PZA, EMB[1,2] Daily, 2 months	INH, RIF daily, 4 months
	INH, RIF, PZA, EMB[1,2] 3x/week, 2 months	INH, RIF 3x/week, 4 months
Optional	INH, RIF, PZA, EMB[2] daily, 2 months	INH, EMB daily, 6 months[3]

INH = isoniazid; RIF = rifampicin; PZA = pyrazinamide; EMB = ethambutol

1. Streptomycin may be substituted for ethambutol.
2. Ethambutol may be omitted in the initial phase of treatment for adults and children who have negative sputum smears, do not have extensive pulmonary tuberculosis or severe forms of extra-pulmonary disease, and who are known to be HIV negative.
3. Associated with higher rate of treatment failure and relapse; should generally not be used in patients with HIV infection.

Standard 9. To foster and assess adherence, a patient-centred approach to administration of drug treatment, based on the patient's needs and mutual respect between the patient and the provider, should be developed for all patients. Supervision and support should be gender-sensitive and age-specific and should draw on the full range of recommended interventions and available support services, including patient counselling and education. A central element of the patient-centred strategy is the use of measures to assess and promote adherence to the treatment regimen and to address poor adherence when it occurs. These measures should be tailored to the individual patient's circumstances and be mutually acceptable to the patient and the provider. Such measures may include direct observation of medication ingestion (directly observed therapy–DOT) by a treatment supporter who is acceptable and accountable to the patient and to the health system.

Standard 10. All patients should be monitored for response to therapy, best judged in patients with pulmonary tuberculosis by follow-up sputum microscopy (two specimens) at least at the time of completion of the initial phase of treatment (two months), at five months, and at the end of treatment. Patients who have positive smears during the fifth month of treatment should be considered as treatment failures and have therapy modified appropriately. (See Standards 14 and 15) In patients with extrapulmonary tuberculosis and in children, the response to treatment is best assessed clinically. Follow-up radiographic examinations are usually unnecessary and may be misleading.

Standard 11. A written record of all medications given, bacteriologic response, and adverse reactions should be maintained for all patients.

Standard 12. In areas with a high prevalence of HIV infection in the general population and where tuberculosis and HIV infection are likely to co-exist, HIV counselling and testing is indicated for all tuberculosis patients as part of their routine management. In areas with lower prevalence rates of HIV, HIV counselling and testing is indicated for tuberculosis patients with symptoms and/or signs of HIV-related conditions and in tuberculosis patients having a history suggestive of high risk of HIV exposure.

Standard 13. All patients with tuberculosis and HIV infection should be evaluated to determine if antiretroviral therapy is indicated during the course of treatment for tuberculosis. Appropriate arrangements for access to antiretroviral drugs should be made for patients who meet indications for treatment. Given the complexity of co-administration of anti-tuberculosis treatment and antiretroviral therapy, consultation with a physician who is expert in this area is recommended before initiation of concurrent treatment for tuberculosis and HIV infection, regardless of which disease appeared first. However, initiation of treatment for tuberculosis should not be delayed. Patients with

tuberculosis and HIV infection should also receive cotrimoxazole as prophylaxis for other infections.

Standard 14. An assessment of the likelihood of drug resistance, based on history of prior treatment, exposure to a possible source case having drug-resistant organisms, and the community prevalence of drug resistance, should be obtained for all patients. Patients who fail treatment and chronic cases should always be assessed for possible drug resistance. For patients in whom drug resistance is considered to be likely, culture and drug susceptibility testing for isoniazid, rifampicin, and ethambutol should be performed promptly.

Standard 15. Patients with tuberculosis caused by drug resistant (especially multi drug resistant [MDR]) organisms should be treated with specialised regimens containing second line anti-tuberculosis drugs. At least four drugs to which the organisms are known or presumed to be susceptible should be used and treatment should be given for at least 18 months. Patient-centred measures are required to ensure adherence. Consultation with a provider experienced in treatment of patients with MDR tuberculosis should be obtained.

Standards for Public Health Responsibilities

Standard 16. All providers of care for patients with tuberculosis should ensure that persons (especially children under five years of age and persons with HIV infection) who are in close contact with patients who have infectious tuberculosis are evaluated and managed in line with international recommendations. Children under five years of age and persons with HIV infection who have been in contact with an infectious case should be evaluated for both latent infection with M TB and for active tuberculosis.

Standard 17. All providers must report both new and re-treatment tuberculosis cases and their treatment outcomes to local public health authorities, in conformance with applicable legal requirements and policies.

Engage People with TB and Affected Communities

RNTCP strives to improve universal access to high quality services and patient-centred treatment to reduce human suffering. It aims to reach the poor and vulnerable population through engaging people and improving community participation.

Advocacy, Communication and Social Mobilisation (ACSM)

ACSM is an important means to reach out to people, increase accessibility and utilisation of services. It is an important and crucial component of RNTCP.

RNTCP aims to widen the scope for providing standardised, good quality treatment and diagnostic services to all TB patients in a patient-friendly environment, in whichever health care facility they seek treatment from.

An effective RNTCP advocacy, social mobilisation and communication strategy is in place, in order to maintain high visibility of TB and RNTCP amongst policy makers, opinion leaders and community, and hence sustain long-term political and administrative commitment and greater community involvement to RNTCP. Advocacy and communication are central and integral parts of RNTCP.

Awareness generation, advocacy, and patient-provider communication and counselling are three main areas of concern for ACSM strategy.

(i) Awareness raising to increase understanding about TB amongst:
- The public so that they make use of RNTCP services
- Practitioners across the country so that they know about correct TB diagnosis and treatment and they refer patients to DOTS services, or become DOT providers themselves.

(ii) Advocacy to develop political, administrative and community-level commitment to TB control in India.

(iii) Patient-Provider communication and counselling to help ensure patient compliance with the treatment regimen, to enhance the reputation of a patient-friendly service, and to encourage patients and their families to become advocates for the programme.

World TB Day activities in Delhi organised in collaboration with partner organisations

The goal of ACSM is to support efforts for:

- Improving case detection and treatment adherence
- Combating stigma and discrimination
- Empowering people affected by TB
- Mobilising political commitment and resources for TB.

The programme has clearly defined communication strategy in place. It identifies:

- Objectives (Communication needs)
- Target groups (Communication players)
- Media options to reach target groups (Communication tools).

The emphasis is on decentralised planning and implementation of need based ACSM activities so as to make them programmatically and culturally relevant. To support the states and districts, designated staff at the state level (IEC Officer) and support staff at the district level (Communication Facilitators) have been provided. They are responsible for helping and supporting programme managers in the states and districts in planning and implementing ACSM activities. They are also responsible for drawing support from other departments/personnel in the states and districts for having convergence with other disease control activities.

To have standardised messages and synergy throughout the country, prototype material has been developed at the national level which has been hosted at RNTCP website. The material at web based IEC Resource centre is for adaptation in the field.

In 2007, the following progress was made in ACSM:

(i) Mass media agency hired at the national level in August 2007 for production of new material and supporting states and districts for decentralised planning and implementation.

(ii) IEC Baseline document has been developed and is available at RNTCP website. This has information on KAP as well as baseline information about capacity of the state to plan and implement IEC component of RNTCP.

(iii) The programme has identified areas that need attention. It has been observed from the IEC baseline document from the field visits that state and district level capacity for IEC needs to be strengthened. The programme is drawing plans and undertaking activities to address this issue. There is also a plan for developing standardised training modules for training of IEC Officers and Communication facilitators, involving members of IEC Advisory Group in CIEs, and also thinking of the ways to link IEC activities to the programme objectives and issues in

Nukkad nataks being organised for the tribals of Narayanganj village, District Mandla, M.P.

NCC cadets performing skit in a TB awareness camp at DG Vaishnav College, Chennai in September, 2007

Speech competition on RNTCP, higher secondary school, village Dihiya, Rewa District, M.P.

Outreach worker is involved in TB awareness at Kolli Hills, Namakkal District, Tamil Nadu

the districts, and also develop mechanism to review and monitor this component.

(iv) Annual training of IEC officer was held at LRS Institute in August 2007.

Community Participation in TB Care

RNTCP has built partnership with other agencies and grassroots organisations for reaching out to people and creating awareness about TB services and also involve them in the activities.

Partnership with Kalyani

Kalyani is a programme run in collaboration with Doordarshan and Ministry of Health and Family Welfare. The programme has a health magazine format and covers different aspects of health and disease control activities. RNTCP has actively engaged Kalyani clubs for DOT provision and also for awareness generation activities.

There are a number of success stories from the field where Kalyani clubs have referred cases to the nearest health facility and also help in completion of treatment. Some of the opinions and quotes of people showcase the popularity of these clubs and the programme.

Kalyani's impact/success story

Heartwarming is an old-fashioned word, but it's the only way to describe Nazma Begum's story. Nazma and her husband Islam Baig of Bhopal are two physically challenged people whose lives were transformed when they met and married each other. Their deep affection, care and concern for each other are obvious. But their 'happily ever after' lives nearly ended in tragedy when Nazma fell severely ill. They sought medical help, but were misguided, and treated casually, such that her condition worsened.

That's when Islam saw an episode of Kalyani that talked about TB. Suspecting that this might be the problem, Islam took Nazma to the health centre where the doctor confirmed their worst fears. Well-supervised treatment and care, under the supervision of the doctor brought about Nazma's recovery, and today she is completely cured of her disease.

Nazma Begum of Hosangabad, a cured TB patient.

Dr. Manoj Varma declared on Kalyani, "I asked them why they had suddenly thought of coming to me after trying out treatments here and there. I asked if a doctor had sent them. They said no, it was because they saw the programme on Kalyani which described the symptoms and treatment in detail and said that the right place to go was the TB Hospital". So in a way Kalyani can take some of the credit for Nazma's recovery.

Kalyani Clubs - Outreach efforts

The extension work done by Kalyani takes many forms. One of these is the creation of Kalyani Clubs.

IEC ACTIVITIES IN VARIOUS STATES

MIZORAM

Painting competition for school children on the occasion of World TB Day 2007, Aizawl, Mizoram

On the morning of World TB Day, a rally by 600 students was taken out in Aizawl. A TB poster painting competition was organised for school children with the collaboration of Mizoram Artists Society where 108 participants took part. A TV advertisement spot competition of 60 seconds duration was also organised on this occasion. IEC materials, viz. posters and instrument boxes with TB slogans were distributed to the school children. Three thousand wall posters and sixty banners were distributed to DTCs and MCs.

UTTAR PRADESH

World TB Day 2007, Lucknow

Keeping focus on the spread of disease in slums, IEC activities were undertaken and sensitisation meetings were planned and conducted. This was done with the aim to create awareness about the hazards of TB infection and the need to combat it through DOTS. Publicity through mikes and pamphlets distribution was also taken up. A rally of about 800 cured patients was organised on the World TB Day. An exhibition on RNTCP activities and performance till fourth quarter was also organised.

The Lucknow Kendra organised a useful discussion on TB with an audience that included current and former TB patients, DOT providers, social activists, and Kalyani Club members. Kalyani Club member **Ram Singh** gave eloquent testimony to the impact that the programme had been having in his village.

The Nidaan Kalyani Club, which has helped **cure 865 former TB sufferers**, introduces potential new users of **the DOTS treatment** to those who have already benefited. This helps the former to get over their hesitation and doubts, and to take proper treatment willingly. It's a good example of how Kalyani goes beyond being a TV programme to being a holistic, integrated, multi-dimensional initiative that is result oriented.

Apart from this, many members of Kalyani Clubs participated in the studio talk shows, while some Kalyani Health clubs like the Birgaon Kalyani Club, near Raipur, organised awareness clubs and created songs on TB that had popular appeal.

MADHYA PRADESH

Puppet shows organised at Rajbada Chowk, Dhar District, M.P.

Puppet shows were organised before the World TB day in slum areas, market places and office areas to deliver information about the cause, effect and cure of TB. A DMC and a DOT centre were inaugurated at Sharda Hospital and Diagnostic Centre, a leading health care facility in Bhopal on the World TB Day.

KERALA

Innovative DOTS bus stop – Kottoor Gram Panchayat, District Kozhikode

Gram Panchayat in Kozhikode district, renamed a bus stop in Koottalida after DOTS with the idea of creating awareness about TB and availability of free diagnosis and treatment under RNTCP. The key messages of RNTCP are prominently and colourfully written on the walls in such a way that the wall writings cannot escape the attention of the passersby. The function was inaugurated by the Panchayat President. The innovative way of publicity is the first of its kind in the state.

Enable and Promote Research

The RNTCP is based on global scientific and operational guidelines and evidence, but that evidence has continued to evolve with time. As newer evidence has become available, RNTCP has made necessary changes in its policies and programme management practices. In addition, with the changing global scenario, RNTCP is incorporating newer and more comprehensive approaches to TB control. To generate the evidence needed to guide policy makers and programme managers, the programme has already undertaken various measures to encourage operational research (OR).

RNTCP has in 2008 revised the National Operational Research Plan, which seeks to further improve the contribution of research to programme implementation, evaluation, and improvement. The plan seeks to leverage the technical expertise and resources existing within India but scattered in the many medical colleges, agencies, and institutions. This action plan outlines the strategy, which will guide the programme to promote OR under its ambit. The following are the key activities of the National or action plan:

1. Establishment of RNTCP OR Cell at the central level.
2. Strengthening of National Standing Committee for OR under RNTCP.
3. Process of identification of priority OR topics.
4. Establishing "standard operating procedures".
5. Improving Dissemination of OR and programmatic uptake.
6. Monitoring OR activities under the programme.

Impact Assessment

Studies and surveillance are conducted from time to time to understand the magnitude of the disease and the impact of TB control efforts. These studies are approved by the Central Operational Research Committee every year. During 2007, results of Annual Risk of Tuberculosis Infection (ARTI) surveys were reported from the states of Andhra Pradesh and Kerala.

A large-scale national disease prevalence survey is in progress since 2007 and is to be completed by 2010. Initially 6 selected sentinel sites/ districts in different zones of the country have been included in this survey. It would be repeated every five years to evaluate progress towards the TB-related Millennium Development Goals. The idea is to get a direct estimate of the TB prevalence in the country.

To obtain a more representative estimate and study the trend in prevalence, the programme plans to undertake TB disease prevalence surveys in Institutes of repute which include NTI (Bangalore), MGIMS (Wardha), AIIMS (New Delhi), PGIMER (Chandigarh), JALMA (Agra) and RMRCT (Jabalpur).

RNTCP Priority Operational Research Agenda, 2008-2009

Improving DOTS implementation

Priority topics

- Prospective, community-based long-term cohort study of patients registered and treated under RNTCP, evaluating multiple key treatment-related questions:
  - Risk factors for death, default, and failure during TB treatment.
  - Evaluation of the impact of migration on treatment outcomes.
  - Treatment outcomes among patients with co-morbidities (diabetes, HIV infection).
  - Treatment outcomes among patients with non-MDR drug resistance.
  - Incidence of recurrent TB due to either relapse or re-infection.
  - Risk factors for death after TB treatment.
  - Risk factors for recurrent tuberculosis, including relapse (i.e. re-activation) and re-infection.
- A cluster randomised controlled trial of innovative and cost-effective programme interventions to reduce treatment default.
- Health seeking behaviour and reasons for delay in diagnosis among TB patients in vulnerable populations, including tribals and urban slum dwellers.
- Pilot test of "2+2" (2 weeks cough & 2 sputum specimens) for TB suspect identification and initial evaluation in high and low workload settings.
- Evaluation of patient reasons for initial default, and the effectiveness of programme interventions to prevent initial default.

- For TB patients with and without HIV infection, does use of a daily treatment regimen during intensive phase or a partially intermittent regimen during intensive phase (with daily dosing during the first two weeks of TB treatment) yield superior treatment outcomes and lower relapse rates compared to patients treated with fully-intermittent regimen?
- Evaluation of the yield of sputum-smear examination of EP cases at diagnosis and on EP and smear negative cases during follow-up.

Additional topics related to treatment outcomes

- Rapid retrospective evaluation of risk factors for Category II treatment default.
- Rapid retrospective evaluation of the impact of treatment interruptions on treatment outcomes.
- Evaluation of using family-DOT in very young paediatric TB patients using paediatric patient-wise boxes.
- Evaluation of financial and non-financial incentives for DOT providers and patients on DOT provision, and patient adherence.
- Treatment delay: Reasons for delay in initiating treatment after diagnosis and the effect on treatment outcomes.
- Does prolongation of the intensive phase of TB treatment in patients with positive sputum smears at two months yield superior treatment outcomes in new smear-positive TB patients?
- Does prolongation of the continuation phase of TB treatment yield superior treatment outcomes or clinical response in serious forms of extrapulmonary TB?

Additional topics related to case finding

- Prevalence of cough >2 weeks among OPD attendees, and diagnostic outcomes among these patients after referral for smear microscopy.

Additional topics related to improving microscopy

- Evaluation of the use of fluorescent smear microscopy in high-workload settings.
- Technical evaluation of low-cost battery-powered LED adaptation for binocular microscopes.
- Effect of sputum collection centres on sputum specimen quality, diagnostic access, and completion of follow-up sputum examinations.
- Frequency and outcomes of patients with single positive smear and positive X-ray cases.
- Impact of follow-up sputum examination using one versus two sputum samples.
- Association of laboratory technician proficiency with daily slide workload: when does accuracy begin to suffer under programme conditions?
- EQA: Evaluation of quality of 1st level STLS reading of RBRC slides vs. a reference umpire's reading in the case of discordant slides.
- EQA: Evaluation of the prevalence of scanty positive smears as a proxy indicator of the quality of smear microscopy activities.

Additional topics related to programme management

- Social and economic impact of TB in India.
- Cost-effectiveness of RNTCP for TB control.

Address TB/HIV

Priority topics

- Evaluation of the optimum screening modality for intensified case finding for TB disease in antiretroviral treatment and Care and Support Centres.
- Reasons for loss of TB suspects referred from integrated counselling and testing centres to designated microscopy centres.

Additional topics

- Prevalence of HIV among TB patients and suspects in low-HIV prevalence areas.
- Incidence and mortality associated with TB among patients awaiting ART and on ART. Feasibility and cost-effectiveness of isoniazid preventative treatment for HIV-infected patients in ART centres.
- Involvement of NGO's in TB-HIV interventions.
- Evaluation of the impact of infection control measures on the incidence of TB infection among health care workers.

Address drug-resistant TB

Priority topics

- Prevalence of MDR-TB in Cat I failures, Cat II entry, and Cat II 3 mo sm+ patients, and association of MDR-TB with source of and past history of anti-TB treatment.
- Evaluation of innovative methods of community-based DOT provision for the delivery of RNTCP Category IV treatment
- Rapid case-control study for risk factors for fluoroquinolone resistance and XDR-TB among patients with MDR-TB.

Additional topics

- Source of previous anti-TB drug exposure for patients registered in RNTCP as re-treatment cases.
- Survey of the use of second-line anti-TB drugs and MDR-TB diagnostic and treatment practices among providers in urban areas.
- Improving sputum transportation for culture and DST.
- Evaluation of the utility of rapid culture and DST methodologies in the programmatic setting of a high TB burden low income country.
- Slide culture for monitoring of response to treatment of patients on Category IV treatment.
- Evaluation of ADRs with RNTCP Cat IV regimen and impact on treatment outcomes.

Engage all health care providers through Public Private Mix and ISTC promotion

Priority topics

- Evaluation of the quality of TB diagnosis and care among private sector physicians.
- Health marketing to private providers – what messages change referral, diagnostic, and treatment behaviour?

Additional topics

- Impact of PPM interventions on equity in access, diagnostic delay, and costs of care.
- Effect of ISTC dissemination on knowledge of proper TB care among specialist physicians.
- Contribution of medical colleges to TB case finding under RNTCP.
- Strengthening inter-department coordination within medical colleges and referral for treatment.

Promote Advocacy, Communication and Social Mobilisation for TB Control

Priority topics

- Qualitative (focus groups) and quantitative (pre-and post intervention) evaluation of the effectiveness of a State multi-level communication plan to promote client demand and public knowledge.

Additional topics

- Qualitative evaluation of the effectiveness of use of 'patients charter' as a tool to systematically promote advocacy and involve the affected communities in local areas in the response to fight TB.

Abstracts of Published Studies, 2007

1. Awareness and Perception about Tuberculosis in the General Population of Delhi, N. Sharma, R. Malhotra, D.K. Taneja, R. Saha and G.K. Ingle, *Asia Pac J Public Health 2007; 19(2): 10–15.*

ABSTRACT: The present study was conducted to assess awareness and perception regarding tuberculosis among the general population of Delhi. A total of 1,008 adults, selected by multistage stratified systematic sampling, were interviewed using a pre-tested proforma. The majority had heard about tuberculosis (99.1%) and most (89.2%) perceived it to be an infectious disease. The correct mode of transmission i.e. airborne (coughing/ sneezing) was known to 71.8% study subjects. The majority (90.1%) knew cough as a symptom. Nearly all (98.2%) perceived Tuberculosis to be a preventable disease, citing the treatment of patients as the mainstay of preventing spread of the disease. However, responses like separation of utensils or hospitalisation of the patient to prevent the spread of the disease indicate persistence of stigma and discrimination in a small proportion of the population. There is a need to widen the scope and intensify the information and education being provided to the population based on gaps identified.

2. The DOTS strategy for treatment of paediatric pulmonary tuberculosis in South Delhi, India, S. Sharma, R. Sarin, U. K. Khalid, N. Singla, P. P. Sharma, D. Behera, INT J TUBERC LUNG DIS 11(12):74–80 © 2007 SETTING: Paediatric Pulmonology Department, TB Institute, New Delhi, India.

OBJECTIVE: To evaluate the outcome of the DOTS strategy for paediatric pulmonary tuberculosis (TB).

DESIGN: Retrospective analysis of 1098 children.

RESULTS: The mean age of the children included in the study was 11.2 years, with more females (61.7%) than males (38.3%). In the 0–5, 6–10 and 11–14 year age groups, the percentage of patients was respectively 18.3%, 26.6% and 55.1%. Patients were registered as new cases (87.7%), relapses (1.9%), failures (1.0%), defaulters (5.0%), transferred in (0.9%) and others (3.5%). Of the total number of cases, 414 were smear-

positive and 404 smear-negative, while sputum status was not known for 280 patients. Sputum positivity increased with age. Category I, II and III regimens were started by re respectively 50.6%, 10.5% and 38.9% patients. The cure rate was 92.4% (302/327) for new and 92% (80/87) for re-treatment cases (_12 _ 0.02, *P* _ 0.901), but the treatment completion rate was significantly higher for new cases (97%, 636/656) than re-treatment cases (53.6%, 15/28) (_12 _ 100.8, *P* _ 0.001). The overall success rate was 95.4% and 82.6% for new and re-treatment cases, respectively (_12 _ 30.35, *P* _ 0.001). Overall, the rates for default, failure and death in the study were respectively 3%, 1.9% and 1%.

CONCLUSION: DOTS appears to be a highly efficacious treatment strategy.

3. Active community surveillance of the impact of different tuberculosis control measures, Tiruvallur, South India, 1968–2001, R Subramani,1 T Santha,1 TR Frieden,2 S Radhakrishna,3 PG Gopi,1 N Selvakumar,1 K Sadacharam1 and PR Narayanan1, *Int. J. Epidemiol. Advance Access published September 22, 2006.*

Background Tuberculosis is curable, but community surveys documenting epidemiological impact of the WHO-recommended DOTS strategy on tuberculosis prevalence have not been published. We used active community surveillance to compare the impact of DOTS with earlier programmes.

Methods: We conducted tuberculosis disease surveys using random cluster sampling of a rural population in South India approximately every 2.5 years from 1968 to 1986, using radiography as a screening tool for sputum examination. In 1999, DOTS was implemented in the area. Prevalence surveys using radiography and symptom screening were conducted at the start of DOTS implementation and after 2.5 years.

Results: From 1968 to 1999, culture-positive and smear-positive tuberculosis declined by 2.3 and 2.5% per annum compared with 11.9 and 5.6% after DOTS implementation. The 2.5 year period of DOTS implementation accounted for one-fourth of the decline in prevalence of culture-positive tuberculosis over 33 years. Multivariate analysis showed that prevalence of culture-positive tuberculosis decreased substantially (10.0% per annum, 95% CI: 2.8–16.6%) owing to DOTS after only slight declines related to temporal trends (2.1% annual decline, 95% CI: 1.1–3.2%) and short-course chemotherapy (1.5% annual decline, 95% CI: _9.7% to 11.5%). Under DOTS, the proportion of total cases identified through clinical care increased from 81 to 92%.

Conclusions: Following DOTS implementation, prevalence of culture-positive tuberculosis decreased rapidly following a gradual decline for the previous 30 years. In the absence of a large HIV epidemic and with relatively low levels of rifampicin resistance, DOTS was associated with rapid reduction of tuberculosis prevalence

4. Drug susceptibility profiling of tuberculous meningitis, S. Nagarathna,* W. Rafi,* H. B. Veenakumari,* R. Mani,* P. Satishchandra, † A. Chandramuki* INT J TUBERC LUNG DIS 12(1):105–107

Drug-resistant tuberculosis is an increasing problem worldwide. There are few reports of drug susceptibility patterns of *Mycobacterium tuberculosis* isolated from cases of tuberculous meningitis. A 5-year retrospective study aimed at analysing the drug susceptibility profile of *M. tuberculosis* isolated from tuberculous meningitis cases was conducted. A total of 366 isolates were analysed. Among these, 301 (82.2%) were sensitive to all the four primary drugs tested, while 65 (17.8%) showed resistance There were 46 (12.5%) isolates resistant to isoniazid (INH), while 9 (2.4%) demonstrated multi-drug resistance. These data suggest that multi-drug resistance in tuberculous meningitis is not yet a serious problem. However, a periodic review is required to ascertain the global incidence of drug-resistant tuberculous meningitis.

5. Impact of mass media on knowledge about tuberculosis control among homemakers in Delhi, Sharma, A.K.; Sharma, R. The International Journal of Tuberculosis and Lung Disease, Volume 11, Number 8, August 2007, pp. 893-897(5)

SETTING: Homes in Delhi, India.

OBJECTIVE: To study the reach of mass media campaigns and their impact on awareness about tuberculosis (TB) control among homemakers/housewives.

DESIGN: A community-based cross-sectional survey among homemakers residing in Delhi for more than 6 months.

RESULTS: Of a total of 920 women interviewed, about 74.2% had seen specific TB-related health messages in one or more of the mass media. The maximum number of subjects could recall having seen billboards or television campaigns. The percentage of respondents who had correct information about various aspects of the disease was higher among those who had seen TB campaigns on any of the mass media. The effectiveness of radio and newsprint in communicating TB messages was found to be more limited than that of television and billboards.

CONCLUSION: The mass media can be effective in getting messages about TB across to the community of women who are homemakers, especially in developing countries. In view of our findings, it may be recommended that television and billboards be used as tools for reaching out to them with specific campaigns regarding TB control, and that the use of these media should be strengthened further.

6. "Improvement of tuberculosis case detection and reduction of discrepancies between men and women by simple sputum-submission instructions: a pragmatic randomised controlled trial." Khan, M. S., O. Dar, et al. (2007). Lancet 369(9577): 1955-60.

7. The cost-effectiveness of DOTS in urban Brazil, Mohan, C.I.; Bishai, D.; Cavalcante, S.; Chaisson, R.E. The International Journal of Tuberculosis and Lung Disease, Volume 11, Number 1, January 2007, pp. 27-32(6).

8. Measuring tuberculosis burden, trends, and the impact of control programmes, *C Dye, A Bassili, A L Bierrenbach, J F Broekmans, V K Chadha, P Glaziou, P G Gopi, M Hosseini, S J Kim, D Manissero, I Onozaki, H L Rieder, S Scheele,F van Leth, M van der Werf, B G Williams, Lancet* Published online January 16, 2008 DOI:10.1016/S1473-3099(07)70291-8.

9. Excess mortality and risk factors for mortality among a cohort of TB patients from rural south India, C. Kolappan, R. Subramani, V. Kumaraswami, T. Santha, P. R. Narayanan, INT J TUBERC LUNG DIS 12(1):81–86, © 2008.

10. Health Policy and Planning. 2008 Jan; Volume 23, Number 1: 43-55. **Direct Observation and Adherence to Tuberculosis Treatment in Chongqing, China: A Descriptive Study;** Hu, D., Liu, X., Chen, J., Wang, Y., Wang, T., Zeng, W., Smith, H., and Garner, P.

11. The International Journal of Tuberculosis and Lung Disease. 2008 Jan; Volume 12, Number 1: 87-92**. India's Revised National Tuberculosis Control Programme: Looking Beyond Detection and Cure;** Kelkar-Khambete, A., Kielmann, K., Pawar, S., Porter, J., Inamdar, V., Datye, A., and Rangan, S.

12. The International Journal of Tuberculosis and Lung Disease. 2008 Jan; Volume 12, Number 1: 81-6. **Excess Mortality and Risk Factors for Mortality among a Cohort of TB Patients from Rural South India;** Kolappan, C., Subramani, R., Kumaraswami, V., Santha, T., and Narayanan, P.R.

13. Private–Private Mix TB Activities in Meerut, Uttar Pradesh, North India: Delivering DOTS Via Collaboration with Private Providers and Non-governmental organisation, Shruti Sehgal, Puneet Dewan, L S Chauhan, S. Sahu, Fraser Wares & Reuben Granich, Indian Journal of Tuberculosis, 2007, 54, No.2, 79- 83.

14. The International Journal of Tuberculosis and Lung Disease. 2007 Dec; Volume 11, Number 12: 1296-301. Feasibility of Routine HIV Testing among TB Patients Through a Voluntary Counselling and Testing Centre; Thomas, B.E., Ramachandran, R., Anitha, S., and Swaminathan, S.

News in Dailies in other Countries

1. Create Awareness about TB thru Writings (Bangladesh)- The daily Star, February 12, 2008

Twenty-two female journalists attended a recent round table titled "Tuberculosis Control Programme: Participation of Media," which was organised by

the Bangladesh Mahila Sangbadik Forum (BMSF), a platform of Dhaka-based female journalists and Brac Advocacy and Human Rights. Mohammad Abdul Awal Mia, Programme Manager of the National TB Control Program (NTCP), was the chief guest. Sheikh Mazibul Haque, Head of the Brac Advocacy and Human Rights Unit, was the moderator, and Dr. Rafiul Alam presented a keynote paper. Abdul Awal said that journalists should be disseminating messages to all on TB, and emphasised that this type of cooperation is essential for working and campaigning against TB, AIDS, and malaria in the world. BMSF President Rashida Amini, who presided over the round table, stressed government and private initiatives for preventing TB. She agreed that journalists could play a vital role in prevention and cure of TB by raising awareness through their writing. The Deputy Program Manager of NTCP, Dr. Viqarunnesa Begum, and Dr. Asif Muztoba Mahmud, Akramul Islam, Saif Uddin Ben Nur, and Sabera Sultana also addressed the roundtable. All speakers urged the journalists to work for the prevention of TB.

2. Media to be Involved in Awareness, Advocacy (Pakistan), The News, December 28, 2007, by Shahina Maqbool.

The Region included in the South Asian Association for Regional Cooperation (SAARC) has more than 30 percent of the global TB burden and an estimated 2.64 million people with HIV infection. A SAARC workshop on the involvement of the media for public awareness and advocacy on TB and HIV/AIDS was held recently. The workshop was designed to increase awareness of the prevention and control of TB and HIV/AIDS. The workshop presented ideas on strengthening cooperation and commitment from the media regarding the prevention and control of HIV/AIDS. The workshop emphasised awareness building and encouraged healthy lifestyle practices for the target population. It also aimed to develop guiding principles on advocacy and awareness of TB and HIV/AIDS among the general population. It was organised by the SAARC TB and HIV/AIDS Centre (STC), in collaboration with the National TB Control Programme of Pakistan. The workshop included a technical session in which the situation of TB in Pakistan and the diagnostic and treatment policies of the National TB Control Programme were presented by programme manager Dr. Hassan Sadik. Also, the media were educated about the situation with HIV/AIDS by Dr. Hassan Zaheer, and participants learned about STC and other ongoing interventions to control TB and HIV/AIDS in the SAARC region.

RNTCP SUCCESS STORIES

The remarkable work done through RNTCP in India is commendable. The coordination of various sectors to facilitate the programme in a decentralised way has been successfully achieved. There has been active participation from TB care providers like medical practitioners, laboratory technicians and STLS/STS which ensured that the programme meets its target and it has been done successfully.

The extraordinary commitment and dedication shown by the programme's large contingent of NGO workers, members of self-help groups and cured patients, who work with the patients to make DOTS services available and accessible even in the most remote corners of India is an extraordinary feat. These are ordinary people who have brought a big difference in their own lives and in the lives of others. Their stories are of success and should be made known to others to work together to fight this deadly disease.

The success stories below are just a tip of the iceberg representing the contribution of men, women, doctors, administrators, community workers who have contributed towards the global fight against TB.

Andhra Pradesh

District Collector in Andhra Pradesh Identifies TB Patient and Guides to Nearest Health Centre

Ms. Pandla Manjula (L) with her mother

"I am Stopping TB"

The District Collector of Medak in Andhra Pradesh, on his routine official visit came across Ms. Pandla Manjula, who was not in her good health and was coughing continuously. On enquiring, he found that she had the cough for a long time. The collector was aware of TB symptoms and so he immediately asked her to get a sputum test.

The sensitisation of the district collector by RNTCP staff and his own commitment to the programme helped in timely detection of TB in Manjula who was initiated on treatment.

Ms. Pandla Manjula is eternally thankful to the kind gesture of the District Collector for her magical transformation. She is now planning to join her husband at work.

Bihar

Polio Health Worker's Efforts to Stop TB

Shri Rajeev Kumar (DOT Provider) with STS Madhepura Tuberculosis Unit

It all started a year and a half back when Rajeev Kumar, a Polio Supervisor in Madhepura, during his routine supervisory activity of the Pulse Polio rounds found an old debilitated man, who was sitting in the courtyard and coughing out blood. He found out from the family members that the patient was suffering from a long time. He was even told that the patient would not survive. Once the Polio rounds were over Rajeev took the old man to the DMC and got his sputum examined. He also made sure that the patient completed the treatment. After some time the old man was finally declared cured.

This old man was his first milestone and now Rajeev is an active DOT provider. In the last 18 months, he has ensured that seven of his patients were cured and one completed treatment. Rajeev is one of those health workers who make full use of field visits during Polio Rounds. Rajeev Kumar is an asset to the RNTCP team and his efforts are highly commendable.

Unemployed Youths Joining "The RNTCP DOTS Mission"

Mr. Rahul Jain, a 26 year old unemployed graduate formed a network of 11 DOT providers who, after being imparted modular training have referred 652 suspects, and imparted DOTS to 233 patients till date.

Along with this, he and his team have contributed greatly in the IEC activities like school children rallies, World TB day floats, nukkad nataks, social mobilisation camps etc. These efforts have enhanced the popularity of DOTS in Bhagalpur Urban Area. Though the wish for his NGO's involvement in Scheme 2 was turned down, undeterred he and his team are working under the unsigned scheme with the same zeal.

Social development continues to be at the core thinking and action of many motivated (although unemployed) youths-An example of reducing the distance between Govt services and the society, facilitating the bond between giver and taker.

After failing to get proper treatment for his sick wife, and finally getting her cured from TB through DOTS, was motivation enough for Mr. Razi Alam, a 34 year old unemployed graduate, he began distributing DOTS from his residence at Makhitakia to TB patients of nearby 7 mohallas namely Mumtaz Mohalla, Professor Colony, Mania Mor, Chand Nagar, Navada, Dhobinia and Milki.

Till date he has zealously imparted DOTS to 81 patients and is known as the "TB ka Doctor" in his locality. This has given him recognition in society and has further motivated him to widely advocate about RNTCP to other unemployed youths. His missionary zeal has been a role model for other DOT providers of district Bhagalpur.

Gujarat

Shopkeeper's Contribution to Stop TB

District TB Centre – Porbandar

Idrish Abdula Ravda is a DOT provider from Chhaya, a place in Porbandar, Gujarat. He is a shopkeeper and is well known in his area. He likes serving people and has been working as a DOT provider since 2003.

He takes out time to provide medicine and has been working as a DOT provider to 98 patients till date. He has successfully cured 40 patients and 38 patients have completed the treatment. Many of the WHO consultants and other officials who have visited his DOT Centre are impressed with his work.

Sector Reliance HIV & TB Control Centre

At Mora Yard, Surat. Started: May-2004

DOT Provider:- Krishna Chandra Das

As part of its commitment to CII and the society at large, Reliance Industries Hazira, has resolved to share the responsibility of eradicating and containing the spread of serious medical conditions such as Tuberculosis and AIDS.

The company has established a well-equipped DOTS therapy & HIV control centre at village Mora. This village is in close vicinity of their plant complex and has a migrant labour population of 8 to 10 thousand families and approximately a total population of 1.5 lakh. The village is also central to 7 to 8 local villages where a large number of contract labourers reside.

A two-fold approach has been adopted for detection and control of HIV and TB. One focused at the workplace and other at the DOTS centre, involving the local population and families of the workers. The centre has been created to exclusively cater to the Tuberculosis and HIV detection, prevention and control strategies amongst the high-risk groups.

Information regarding Tuberculosis and HIV infection is being regularly imparted to employees through circulars, lectures and seminars, posters and pamphlet distribution.

Haryana

A Housewife is Helping in Stopping TB
One Woman's Mission to Control TB

Neelam with one of the patients

Ms. Neelam is a dedicated housewife whose husband was suffering from TB and has been cured. This motivated her to support other TB patients to complete their treatment.

She started as a DOT provider in 2003. She has achieved success in her endeavour and has cured 354 patients since then.

She has personal touch and bonding with her patients and visits them regularly. She is also in close contact with the medical officer in charge and the district TB officer. In cases of complications she refers the patients to them.

Jharkhand

Public Sector Undertaking Collaborates to "Stop TB"

DMC established at the Hindustan Copper Limited Hospital on October 29th, 2007

Hindustan Copper Ltd. is one of the oldest copper mines in India and was established in 1924 as Indian Copper Corp Ltd. It was converted to HCL in 1972. It also runs a hospital for its employees and ex-employees.

The hospital with 80 beds has a fully functional lab, an operation theatre and an X-Ray unit. Fourteen doctors including four specialists, 21 nurses and 62 para-medical staff work here. The company is also involved in community outreach programmes as part of its Corporate Social Responsibility and conducts regular health camps in the surrounding villages every month.

The hospital is in remote area and caters to a large rural population. Keeping this in mind a DMC and DOTS centre has also been started in the hospital since 29th October, 2007. Two doctors, four pharmacists and three lab technicians have been trained in RNTCP at the DTC Jamshedpur.

The whole programme is running under the able leadership of the Chief Medical Superintendent, Dr. D.K. Singh, whose enthusiastic response and initiative has made this programme possible in HCL. He was responsible for encouraging his staff to take active part in getting trained and following RNTCP norms.

Karnataka

Dedication to Social Service

Raichur City, District Raichur

Sixty four year old Chamanlal Mootha K. is an engineering graduate from Suratkal. He used to work as a cloth businessman in Raichur city. He is dedicated to social service and health care and is actively involved in conducting general health check-up and eye camps.

He was suffering from tuberculosis and got cured in 2003 by using RNTCP DOTS medicines. This experience totally changed him. He saw it as an opportunity to help the other patients suffering from TB. After getting cured he was a man with a mission. He has devoted himself to DOT services by converting his cloth shop into a full time DOT centre. More than 30 TB patients have been cured in his centre and five patients are on DOT currently.

He visits his patients regularly and has retrieved a number of interrupted patients back on treatment by effective counselling. He also provides economical support to the poor and needy patients.

He has been felicitated by Sri Tushar Gririnath, Chairman of DTCS and deputy commissioner, Raichur for his commendable efforts on World TB Day on 24th March, 2005.

Madhya Pradesh

Village Headman is "Stopping TB"

Rakria Village, Dindori

A village headman Shivanand Singh has taken over the task of spreading awareness about TB and helping his fellow villagers.

Jai Singh Marawi lost his left leg 15 years ago due to gangrene. He was affected by TB disease in 2007 which had put a lot of burden on his family. His only solace was his wife who was taking care of him.

When the village headman Shivanand Singh came to know about Marawi's disease he visited the family and comforted them by informing that TB is curable and the treatment is available for free.

He accompanied the patient to the microscopic centre in Dindori and helped in examination and starting treatment. It was found in the check-up that Marawi was in category III TB and needed immediate attention.

Shivanand Singh took the initiative and became a DOT provider for Marawi. He took care of Marawi and ensured DOTS. He also guided him for follow-up sputum examination.

Jai Singh Marawi is a happy man today. He got cured and is living a normal life. He is thankful to DOTS and has himself become a DOT provider and also spreads the awareness about the disease in his village and neighbouring areas.

Orissa

A Missionary with a Mission

Sister Marie Lourdes has devoted her life for the cause of the poor and marginalised community for over 45 years. In charge of St. Joseph Seva Sadan, working in Jokalandi area located in the outskirts of Bhubaneswar, Orissa, she also runs a health centre for the poor and needy in the state. She has provided DOTS to more than 30 patients in the area. She also counsels and traces patients who have missed doses. After her day's work is over she visits her patients and monitors their health. She also conducts awareness programmes in schools and rehabilitation centres to sensitise people about the disease. She has been awarded the best DP prize in the year 2006-07.

She was appreciated for her contribution by the DDG (TB) on his visit to her health centre in April 2007.

Steel Authority of India Limited (SAIL) and DOTS

Through the implementation of the RNTCP DOTS programme, SAIL plants have made a difference not only to their own staff but also to the community around, touching the lives of millions. Together, the four SAIL steel plants at Rourkela, Bhilai, Durgapur and Bokaro have implemented the DOTS programme and cater to a population of close to 2.5 million. Together, they also serve more than 0.16 million employees at the plants and their mines.

Ispat General Hospital, Rourkela

Rourkela Steel Plant

The Rourkela Steel Plant (RSP) became Ispat General Hospital (IGH) in August 1998, the first hospital belonging to a Public Sector Undertaking to launch the RNTCP DOTS programme. It is working as a DMC for the Rourkela Tuberculosis Unit led by Dr. Uma Devi and Dr. C. Mohan Rao.

The SAIL initiative has also spurred several small factories in their neighbourhood to implement DOTS, among these are the metal open-cast factories and rolling mills.

Punjab

Staff Nurse in Amritsar makes Extraordinary Efforts to Stop TB

Staff nurse gave DOTS to 185 patients at her home

Smt. Gurmeet Kaur, staff nurse at TB Hospital at Amritsar is running DOT Centre at her home in the slum area Tug Pai Batala Road, Amritsar since 2004. She has already provided DOTS to 185 patients in her area and 15 patients are taking treatment at present. Her DOT Centre has been commended for sincere efforts in curing patients and retrieving default patients. Her work is being appreciated by the print media as well as the local TV channel. Her sons, Harpreet and Jaspreet assist her in running the DOT Centre. She was given appreciation certificate by the Hon'ble Health Minister Ms. Laxmikant Chawla on World TB Day on 24th March, 2007.

Tamil Nadu

Disability is a Motivation

Alternatively-abled DOT Provider

Cherambadi is a small town situated in Pandalur Taluk of the Nilgiris District, Tamil Nadu State bordering the State of Kerala with a population of around 1500, mostly plantation workers. The town has a large number of tuberculosis patients but the nearest health facility to this town is about seven kilometres away. The transport facilities are poor and the nearest DOT centre is quite far away. Most of these patients found it difficult to commute to the facility for their medications. To make DOT more convenient the staff of the DTC were on the look out for a suitable person who would act as a community DOT provider.

Thiru Rajarathinam, aged, 39 who runs a tea stall volunteered to act as a DOT Provider and has so far successfully administered DOT to 16 patients over the past five years. At present, he has three patients undergoing medication. The most remarkable aspect is that Thiru Rajarathinam is a physically challenged person who has lost the use of both legs due to poliomyelitis at an early age. But this disability has not stood in the way of his being an asset to the society.

When asked the reason for his eagerness to volunteer for provision of DOT, the answer was that his own suffering made him sympathetic to the sufferings of his fellow men.

West Bengal

I can do Everything for Poor Patients

"I am Stopping TB" - Bankura District

Krishna Chandra Das runs a tea stall at Bhairab Danga bus stop more at Bankura Sonamukhi main road. He is 45 years of age and resides in a small village named Dhaldanga under Sonamukhi Block, Bankura. The nearest Block Primary Health Centre from his village is about 20 kilometres away and the sub-centre is about five kilometres away.

DOT Provider: Krishna Chandra Das

Patients, especially on DOTS faced great difficulties to avail the health facility. Uttam Malakar, STLS attached to Sonamukhi Tuberculosis Unit after his supervisory rounds took rest at Das's tea stall. Over a cup of tea, Malakar told Das about the TB Programme and sought help for DOTS provision. Das happily accepted the offer and took it as a challenge. In his words, "He can do everything for poor patients".

He got formal training from STS, STLS and MOTC. Initially, there were some problems like maintaining the treatment cards. But now Das performs his duties excellently without burdening his business. His relationship with his patients is very good and now his small tea stall has become a well known place. People come to him asking about TB and he has become a counsellor for them. He also sends Chest Symptomatic to nearest DMC (Sonamukhi DMC). He has cured eight TB patients and at present four patients are taking medicines regularly under his care.

RNTCP in the Different Sectors

Tea Sector, Jalpaiguri District, West Bengal

Jalpaiguri is a district in the northern part of West Bengal. It is famous for its scenic beauty and miles and miles of lush green gardens of tea plants. The famed tea plantations of Duars are jewels in its crown. There are 150 Tea gardens in the Duars region and 44 Tea gardens in the Tarai belts of the district. Thirty per cent of the district's population works in the tea sector.

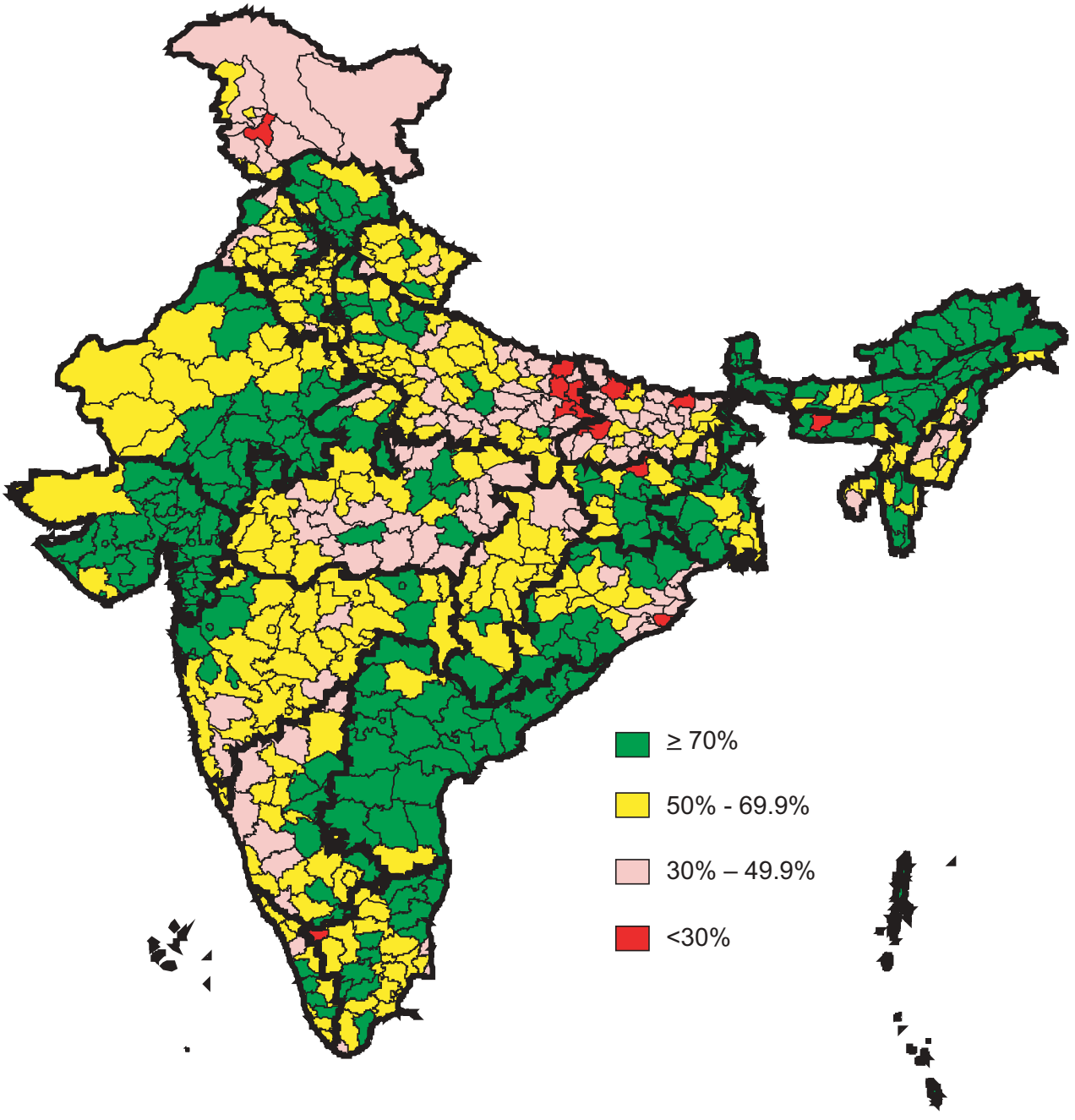
On 15th August, 2000, RNTCP was implemented at Jalpaiguri district. From the very beginning the District TB Control Society concentrated to involve the vast and important tea sector of the district. It started with the incorporation of the important tea planter's body like Indian Tea Planter's Association (ITPA), Duars branch of Indian Tea Association (DBITA), and Tea Planter's Association of India (TAI) as members of the DTCS.

The training component of the doctors and health assistants of tea gardens were stressed upon and over 80 per cent doctors and health assistants were trained in RNTCP and 100% sensitised about the programme. The tea garden management was also motivated and sensitisation workshops were also organised for them in various gardens. Strategically placed good tea garden hospitals and group hospital have been identified to serve as microscopy centre as per RNTCP guidelines.

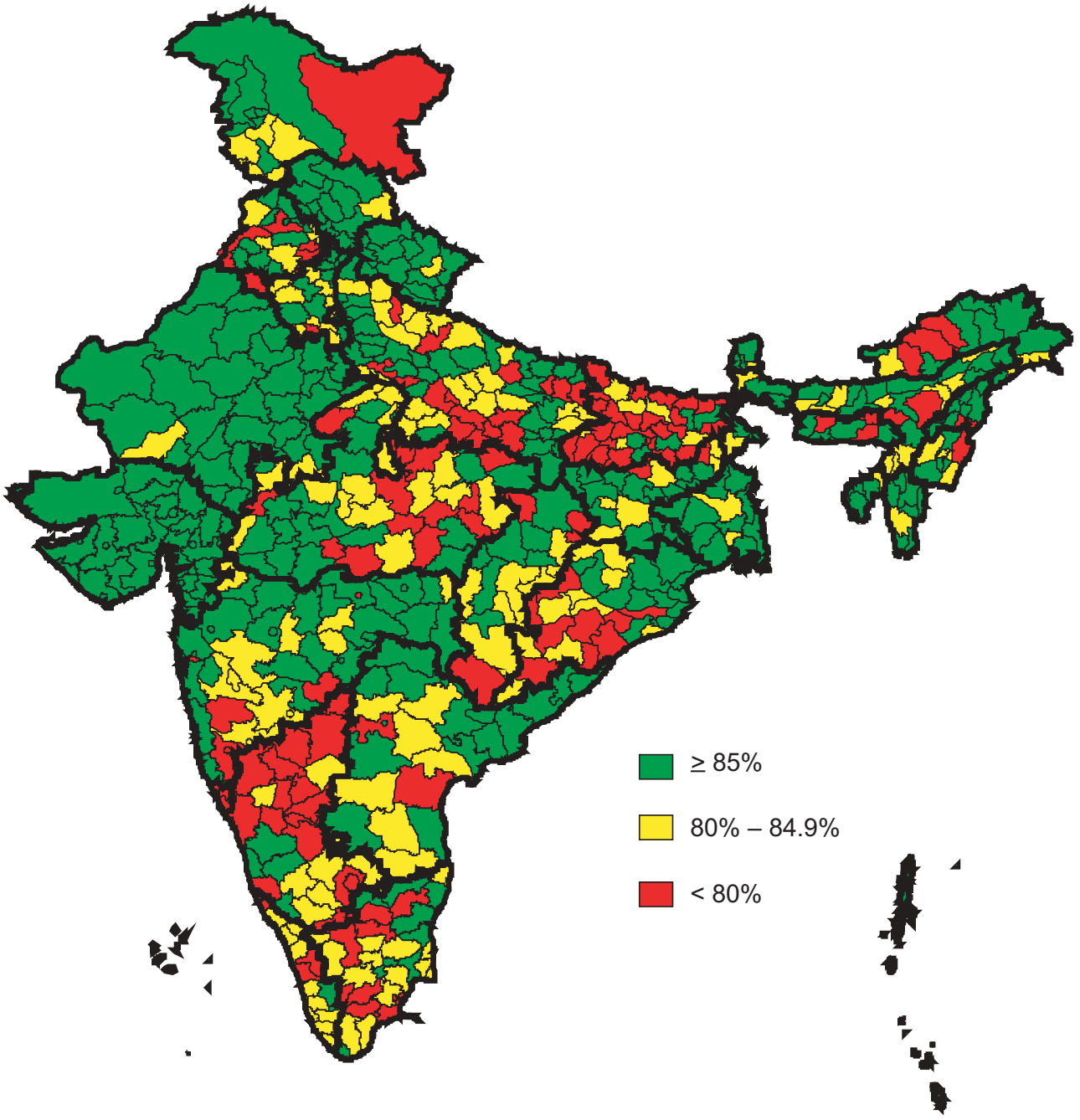
At present three tea garden hospitals are working as microscopy centres under RNTCP. The laboratory technicians involved are rigorously trained in RNTCP to maintain the good quality of sputum microscopy. The reagents and other drugs are being supplied by DTCS in a concerted manner. Since Qtr-2, 06 to Qtr-3, 07, 4177 pts from tea sector has been treated under RNTCP in Jalpaiguri district.

PERFORMANCE OF RNTCP

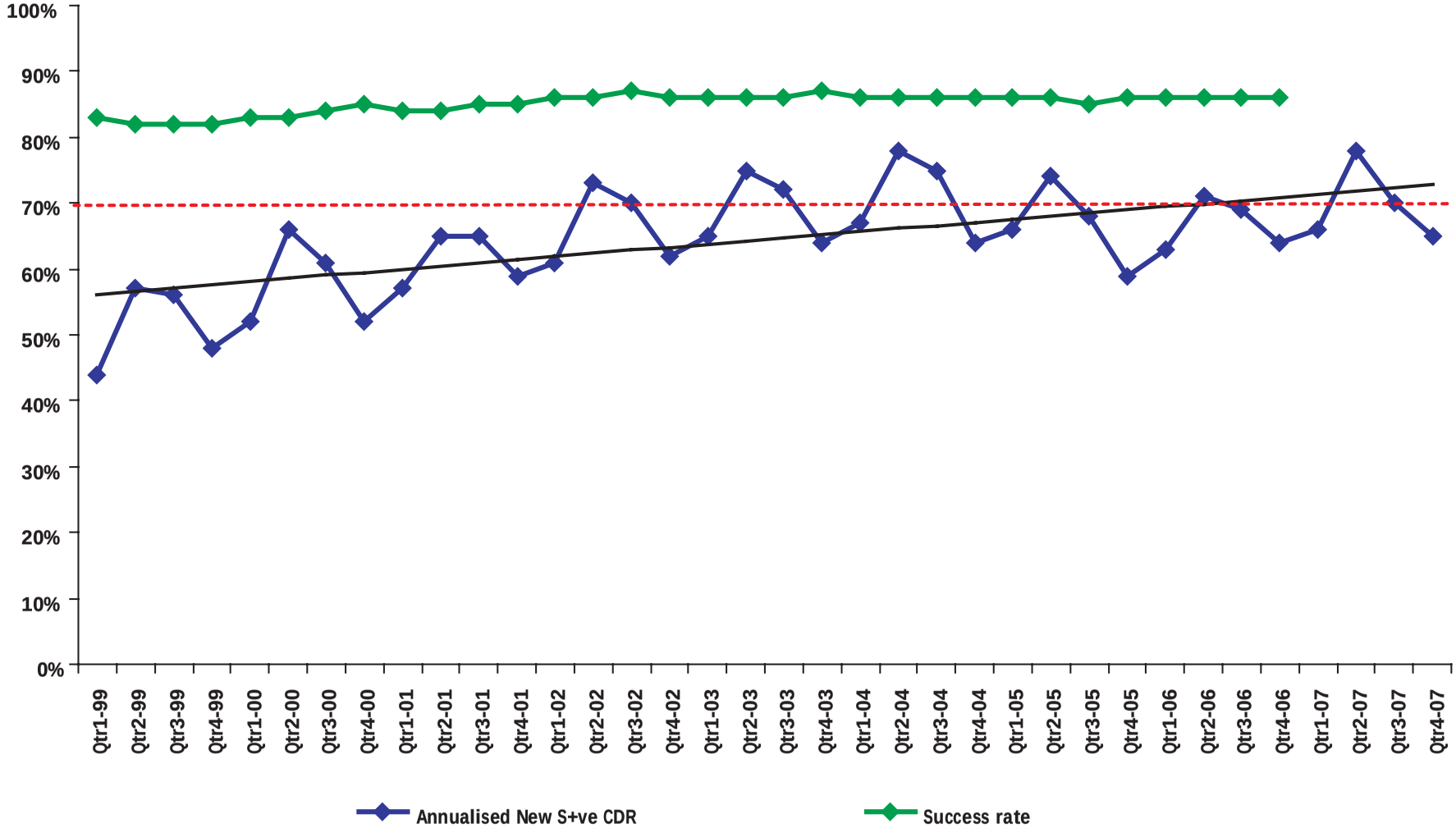
New Smear Positive Case Detection Rate
India, 2007



Cure Rate (by District)
India, 2006

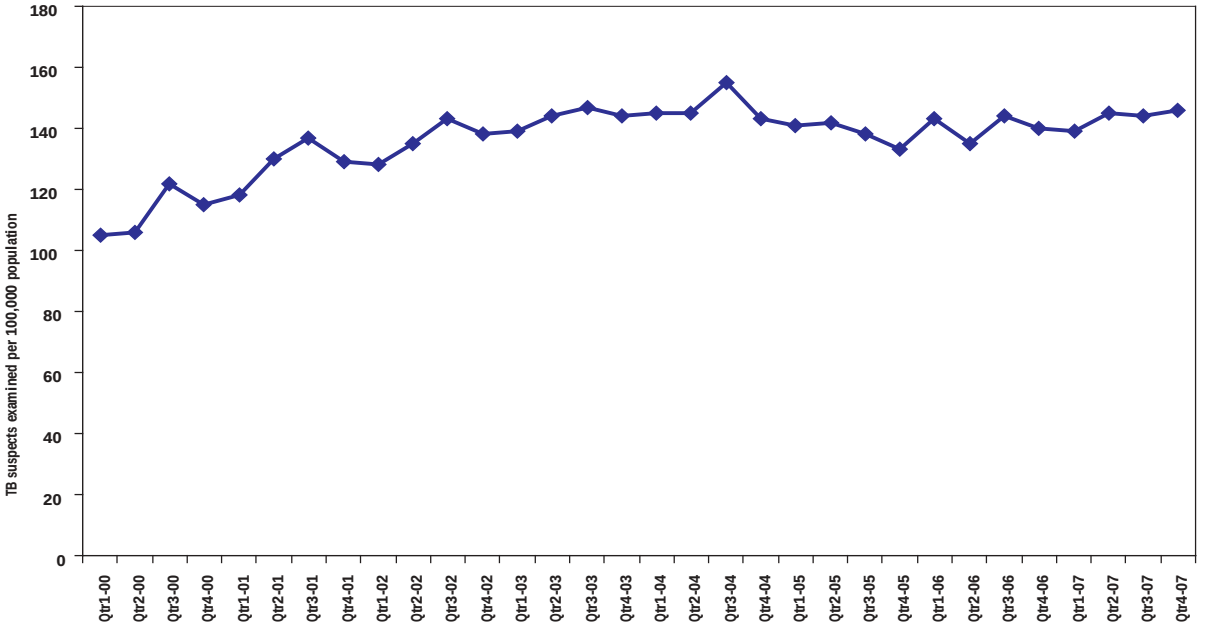


Annualised New Smear-Positive Case Detection Rate and Treatment Success Rate in DOTS Areas, 1999-2007



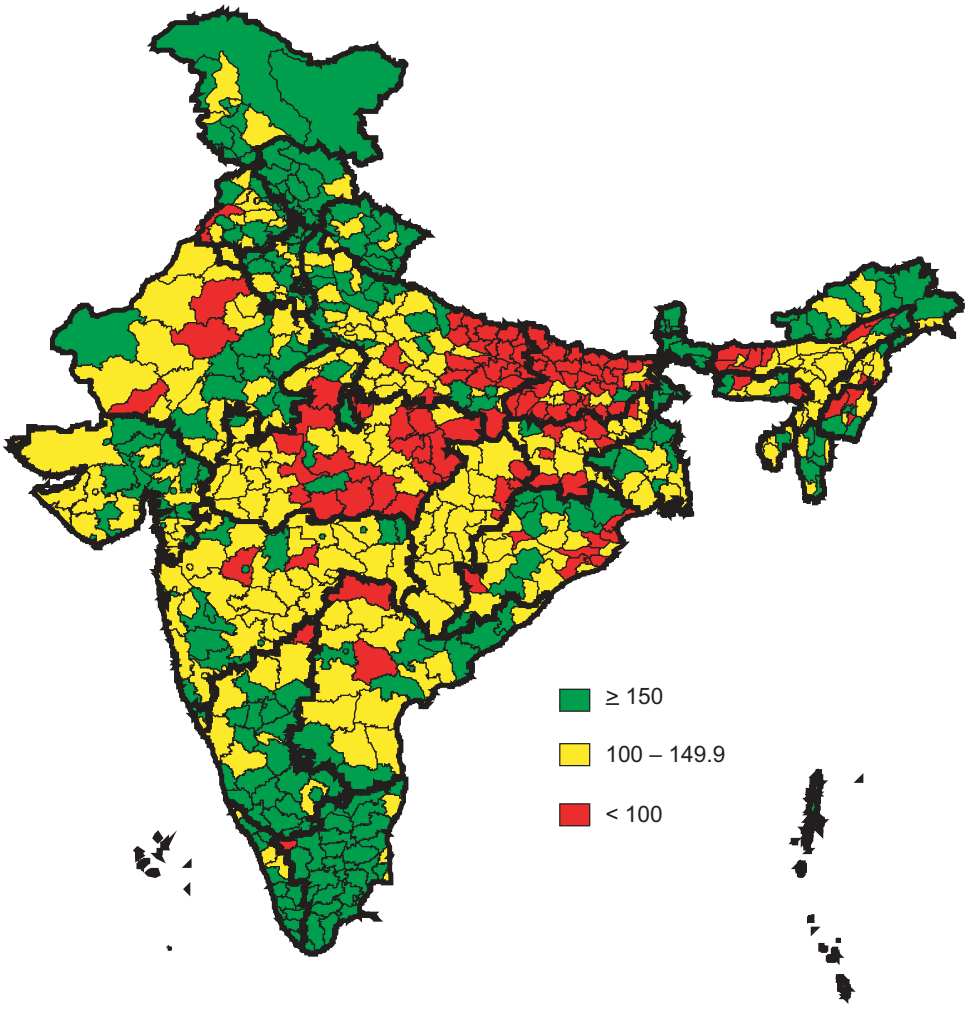
Population projected from 2001 census
Estimated no. of NSP cases - 75/100,000 population per year (based on recent ARTI report)

TB Suspects Examined per 100,000 Population*, 2000-2007

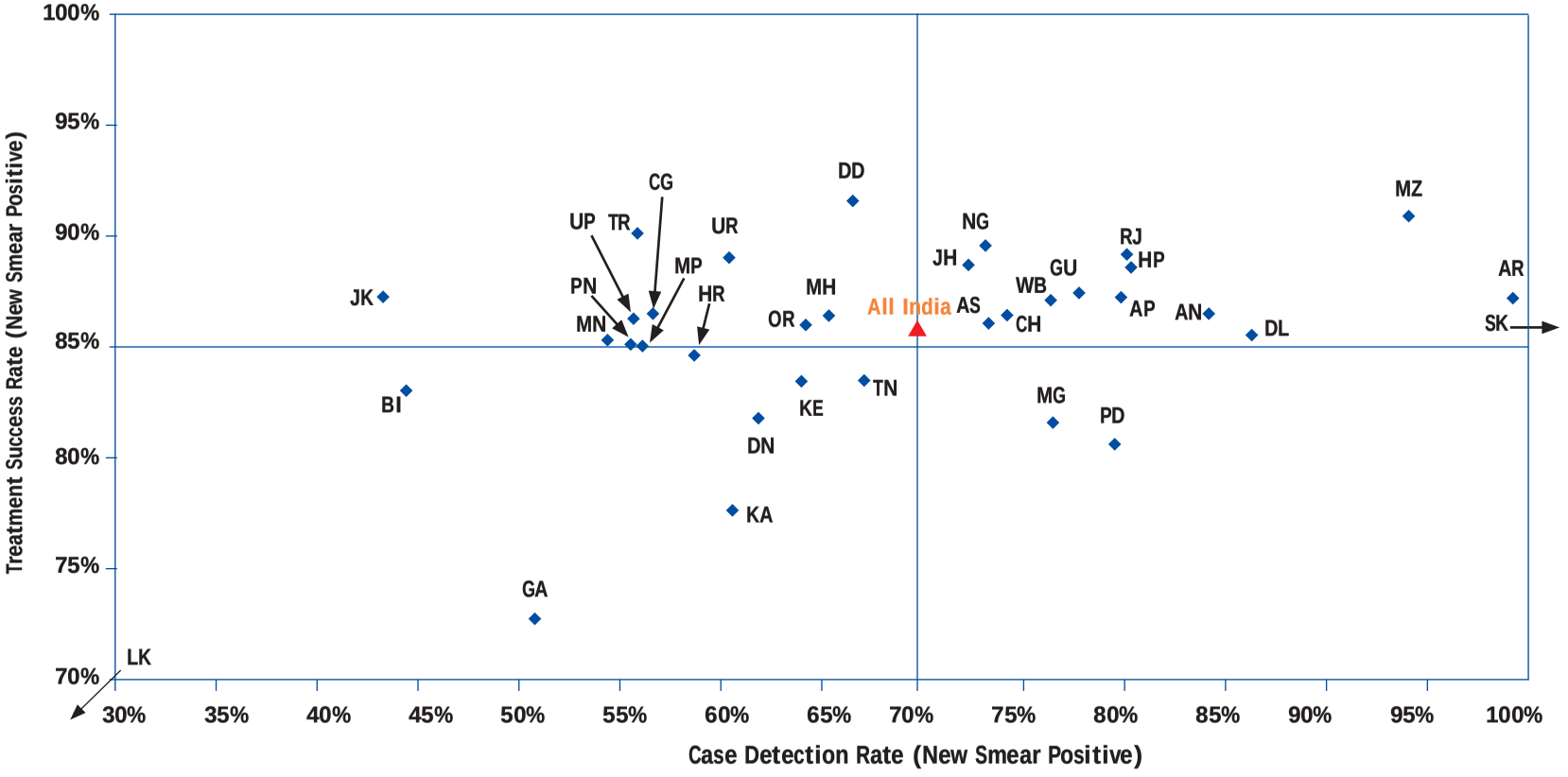


*During RNTCP expansion phase, data for districts implementing partial quarters has been excluded

TB Suspects Examined per 100,000 Population (by District) India, 2007



Case Detection Rate (2007) and Treatment Success Rate (2006) in RNTCP Areas



AP-Andhra Pradesh; AR- Arunachal Pradesh; AN- Andaman & Nicobar; AS- Assam; CH- Chandigarh; CG- Chhattisgarh; DD- Daman & Diu; DL- Delhi; DN- Dadra & Nagar Haveli; GA- Goa; GU- Gujarat; HR- Haryana; HP- Himachal Pradesh; JK- Jammu & Kashmir; JH- Jharkhand; KA- Karnataka; KE- Kerala; LK-Lakshadweep; MP- Madhya Pradesh; MH- Maharashtra; MN- Manipur; MG- Meghalaya; MZ- Mizoram; NG- Nagaland; OR- Orissa; PD- Puducherry; PN- Punjab; RJ- Rajasthan; SK- Sikkim; TN- Tamil Nadu; TR- Tripura; UP- Uttar Pradesh; UR- Uttarakhand; WB- West Bengal

Performance of RNTCP Case Detection (2007), Smear Conversion (4th quarter 2006 and 1st to 3rd quarter 2007) and Treatment Outcomes (2006)

State	Population (in lakh) covered by RNTCP[1]	No. of TB suspects examined	Suspects examined per lakh population per quarter	No. of smear positive patients diagnosed[2]	% of S+ve cases among suspects	Total patients registered for treatment[3]	Annual total case detection rate	New smear positive patients registered for treatment	Annual new smear positive case detection rate (%)		% new sputum positive out of total new pulmonary cases	No. of new smear negative cases registered for treatment	No. of new EP cases registered for treatment
Andaman & Nicobar	4	3728	232	319	9%	775	193	256	64	85%	51%	248	188
Andhra Pradesh	813	488149	150	73250	15%	111304	137	49099	60	81%	60%	32563	11006
Arunachal Pradesh	12	10308	217	1270	12%	2746	232	890	75	100%	55%	732	381
Assam	295	133923	114	21329	16%	36766	125	16324	55	74%	61%	10536	3786
Bihar	923	293617	79	42149	14%	79619	86	30834	33	45%	52%	28034	5022
Chandigarh	10	13934	336	1649	12%	2411	232	736	71	75%	60%	489	721
Chhattisgarh	233	109222	117	13005	12%	27504	118	10598	46	57%	49%	11092	2981
D & N Haveli	3	1712	168	200	12%	390	153	127	50	62%	61%	82	68
Daman & Diu	2	2979	407	250	8%	337	184	98	54	67%	51%	95	27
Delhi	166	156474	236	24240	15%	49058	296	13695	83	87%	60%	9047	15368
Goa	16	11531	182	1161	10%	2104	133	645	41	51%	53%	574	510
Gujarat	556	347676	156	60907	18%	80399	145	34856	63	78%	75%	11699	10380
Haryana	234	162261	173	23123	14%	35591	152	13116	56	59%	63%	7607	5529
Himachal Pradesh	65	63220	244	8118	13%	13611	210	4978	77	81%	66%	2621	2948
Jammu & Kashmir	120	77281	161	6675	9%	12392	103	4932	41	43%	66%	2538	3026
Jharkhand	296	126457	107	20474	16%	36133	122	16164	55	73%	58%	11774	2610
Karnataka	568	384278	169	42444	11%	67630	119	25956	46	61%	62%	15884	12271
Kerala	339	242861	179	14321	6%	24397	72	10915	32	64%	70%	4694	5688
Lakshadweep	1	228	84	6	3%	15	22	6	9	12%	55%	5	2
Madhya Pradesh	680	296740	109	47963	16%	80410	118	30424	45	56%	55%	25122	8682
Maharashtra	1055	604464	143	78932	13%	142792	135	55571	53	66%	60%	37461	23234
Manipur	26	16004	154	1465	9%	4885	188	1064	41	55%	36%	1893	920
Meghalaya	25	14284	143	2140	15%	4857	194	1447	58	77%	57%	1097	1149
Mizoram	10	7952	205	928	12%	2177	225	689	71	95%	57%	513	659
Nagaland	22	11253	130	1366	12%	3079	143	1193	55	74%	59%	846	488

Performance of RNTCP (Contd.)

State	Population (in lakh) covered by RNTCP[1]	No. of TB suspects examined	Suspects examined per lakh population per quarter	No. of smear positive patients diagnosed[2]	% of S+ve cases among suspects	Total patients registered for treatment[3]	Annual total case detection rate	New smear positive patients registered for treatment	Annual new smear positive case detection rate (%)		% new sputum positive out of total new pulmonary cases	No. of new smear negative cases registered for treatment	No. of new EP cases registered for treatment
Orissa	395	202036	128	27931	14%	49285	125	21689	55	65%	63%	12831	8271
Puducherry	11	14703	347	1477	10%	1383	131	636	60	80%	76%	201	299
Punjab	263	154991	147	21242	14%	35875	136	14093	54	56%	65%	7717	6847
Rajasthan	635	364641	143	70972	19%	111700	176	41155	65	81%	55%	33095	12835
Sikkim	6	7841	334	759	10%	1538	262	493	84	112%	64%	279	436
Tamil Nadu	658	574158	218	47196	8%	86113	131	33359	51	68%	58%	24075	17158
Tripura	35	17671	127	1763	10%	2573	74	1460	42	56%	76%	466	367
Uttar Pradesh	1874	969170	129	146915	15%	245106	131	99606	53	56%	56%	77060	24712
Uttarakhand	94	65689	176	9231	14%	13406	143	5398	58	61%	62%	3356	1895
West Bengal	868	533968	154	65231	12%	107226	123	50133	58	77%	69%	22539	16280
Grand Total	**11310**	**6485404**	**143**	**880401**	**14%**	**1475587**	**130**	**592635**	**52**	**70%**	**60%**	**398865**	**206744**

Estimated New Smear Positive cases/lakh population based on ARTI data for North Zone (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttar Pradesh, Uttarakhand) is 95; East Zone (Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, West Bengal) is 75; South Zone (Andhra Pradesh, Karnataka, Lakshadweep, Puducherry, Tamil Nadu) is 75 and West Zone (Chhattisgarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan) is 80; Orissa is 85; Kerala is 50

1 Projected population based on census population of 2001 is used for calculation of case-detection rate. 1 lakh = 100,000 population

2 Smear positive patients diagnosed include new smear positive cases and smear positive re-treatment cases

3 Total patients registered for treatment includes new sputum smear positive cases, new smear negative cases, new extra-pulmonary cases, smear positive re-treatment cases and 'Others'

Performance of RNTCP (Contd.)

State	% of new EP cases out of all new cases	No. of smear positive re-treatment cases registered for treatment	% of re-treatment cases out of all smear positive cases	No. (%) of paediatric cases out of all new cases		3 month conversion rate of new smear positive patients	Cure rate of new smear positive patients	Treatment success rate of new smear positive patients	No. (%) of NSP cases started RNTCP DOTS within 7 days of diagnosis		No. (%) of NSP cases registered within one month of starting RNTCP DOTS treatment		No. (%) of cured NSP cases having end of treatment follow- up sputum done within 7 days of last dose	
Andaman & Nicobar	27%	56	18%	102	15%	94%	86%	86%	251	98%	243	94%	202	90%
Andhra Pradesh	12%	14656	23%	3482	4%	91%	85%	87%	42170	86%	47126	96%	29677	77%
Arunachal Pradesh	19%	393	30%	125	6%	90%	86%	87%	856	95%	751	83%	684	83%
Assam	12%	3597	18%	1148	4%	90%	85%	86%	14051	87%	15797	97%	10161	85%
Bihar	8%	8225	21%	3694	6%	85%	75%	83%	23944	86%	27564	96%	10895	75%
Chandigarh	37%	299	29%	205	11%	92%	86%	86%	650	88%	706	96%	641	94%
Chhattisgarh	12%	1728	14%	1263	5%	89%	84%	87%	8998	86%	10344	99%	6982	77%
D & N Haveli	25%	53	29%	16	6%	94%	82%	82%	127	100%	127	100%	121	100%
Daman & Diu	12%	47	32%	1	0.5%	89%	87%	92%	98	100%	98	100%	83	98%
Delhi	40%	6676	33%	5554	15%	89%	85%	86%	12418	91%	13980	100%	11418	98%
Goa	29%	226	26%	201	12%	86%	72%	73%	525	82%	433	67%	422	78%
Gujarat	18%	17083	33%	3548	6%	92%	87%	87%	30632	88%	34311	98%	25008	86%
Haryana	21%	7221	36%	1544	6%	89%	84%	85%	10314	88%	12520	96%	10287	88%
Himachal Pradesh	28%	2498	33%	369	3%	93%	88%	89%	4421	94%	4402	92%	3812	89%
Jammu & Kashmir	29%	1471	23%	474	5%	90%	85%	87%	3964	91%	3870	87%	2597	78%
Jharkhand	9%	3071	16%	1709	6%	90%	85%	89%	13384	83%	15810	98%	8057	66%
Karnataka	23%	9706	27%	3447	6%	83%	76%	78%	21596	83%	24219	89%	14483	75%
Kerala	27%	2441	18%	1911	9%	84%	81%	83%	9578	89%	10204	94%	6945	79%
Lakshadweep	15%	2	25%	1	8%	100%	71%	71%	6	100%	6	100%	6	100%
Madhya Pradesh	14%	12069	28%	2791	4%	88%	82%	85%	24597	84%	28222	93%	18050	73%
Maharashtra	20%	15921	22%	6948	6%	90%	85%	86%	48527	88%	53633	97%	38607	82%
Manipur	24%	312	23%	354	9%	88%	85%	85%	1063	97%	979	90%	860	85%
Meghalaya	31%	581	29%	549	15%	85%	81%	82%	1234	90%	1407	97%	917	87%
Mizoram	35%	177	20%	139	7%	95%	91%	91%	770	99%	775	100%	478	95%
Nagaland	19%	367	24%	231	9%	92%	89%	90%	1121	87%	1198	91%	928	84%
Orissa	19%	4065	16%	2136	5%	87%	81%	86%	17688	82%	21174	97%	11445	71%

Performance of RNTCP (Contd.)

State	% of new EP cases out of all new cases	No. of smear positive re-treatment cases registered for treatment	% of re-treatment cases out of all smear positive cases	No. (%) of paediatric cases out of all new cases		3 month conversion rate of new smear positive patients	Cure rate of new smear positive patients	Treatment success rate of new smear positive patients	No. (%) of NSP cases started RNTCP DOTS within 7 days of diagnosis		No. (%) of NSP cases registered within one month of starting RNTCP DOTS treatment		No. (%) of cured NSP cases having end of treatment follow- up sputum done within 7 days of last dose	
Puducherry	26%	224	26%	37	3%	87%	80%	81%	542	79%	656	96%	481	90%
Punjab	24%	5507	28%	1636	6%	88%	83%	85%	12910	92%	13779	98%	10220	91%
Rajasthan	15%	20569	33%	4450	5%	91%	87%	89%	33909	82%	38740	94%	28811	82%
Sikkim	36%	228	32%	153	13%	90%	86%	86%	469	95%	550	100%	412	95%
Tamil Nadu	23%	9276	22%	7901	11%	89%	82%	83%	26543	80%	32374	97%	22293	81%
Tripura	16%	237	14%	61	3%	89%	86%	90%	999	77%	1126	87%	774	79%
Uttar Pradesh	12%	35399	26%	11498	6%	90%	83%	86%	87708	90%	99327	99%	67627	89%
Uttarakhand	18%	2276	30%	653	6%	93%	88%	89%	4937	92%	5325	99%	3558	91%
West Bengal	18%	11782	19%	5099	6%	90%	86%	87%	40429	81%	47540	95%	36584	84%
Grand Total	**17%**	**198439**	**25%**	**73430**	**6%**	**89%**	**84%**	**86%**	**501429**	**86%**	**569316**	**96%**	**384526**	**82%**

Estimated New Smear Positive cases/lakh population based on ARTI data for North Zone (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttar Pradesh, Uttarakhand) is 95; East Zone (Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, West Bengal) is 75; South Zone (Andhra Pradesh, Karnataka, Lakshadweep, Puducherry, Tamil Nadu) is 75 and West Zone (Chhattisgarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan) is 80; Orissa is 85; Kerala is 50

1 Projected population based on census population of 2001 is used for calculation of case-detection rate. 1 lakh = 100,000 population
2 Smear positive patients diagnosed include new smear positive cases and smear positive re-treatment cases
3 Total patients registered for treatment includes new sputum smear positive cases, new smear negative cases, new extra-pulmonary cases, smear positive re-treatment cases and 'Others'

Treatment Outcome of New Cases for 2006

Implementing states	New Smear Positive[1]							New Smear Negative[2]						New Extra Pulmonary[2]					
	Regis-tered	Cure	Comp-leted	Died	Failure	Defaulted	Trans out	Regis-tered	Comp-leted	Died	Failure	Defaulted	Trans out	Regis-tered	Comp-leted	Died	Failure	Defaulted	Trans out
Andaman & Nicobar	274	85.8%	0.7%	2.9%	2.6%	6.6%	1.5%	299	82.6%	6.4%	0.3%	9.4%	1.3%	235	77.9%	4.3%	0.0%	14.5%	3.4%
Andhra Pradesh	44911	84.8%	2.5%	5.3%	2.8%	3.7%	1.0%	34990	87.1%	4.3%	0.6%	7.4%	0.6%	9394	89.9%	2.8%	0.2%	6.0%	1.0%
Arunachal Pradesh	922	85.7%	1.5%	3.7%	4.0%	4.0%	1.1%	765	82.7%	2.7%	1.6%	11.2%	1.7%	296	84.1%	1.7%	0.7%	12.8%	0.7%
Assam	13962	84.9%	1.2%	4.8%	2.0%	6.5%	0.6%	9850	82.2%	3.8%	0.6%	12.5%	0.8%	2908	89.5%	2.6%	0.2%	6.7%	1.0%
Bihar	19749	74.8%	8.3%	4.9%	2.4%	8.9%	0.8%	26266	87.4%	2.5%	0.7%	8.8%	0.6%	3544	68.5%	1.6%	0.3%	6.2%	2.7%
Chandigarh	785	86.5%	0.0%	2.5%	3.8%	3.2%	4.0%	441	92.7%	1.6%	1.8%	2.3%	1.6%	675	94.5%	1.5%	0.1%	1.0%	2.8%
Chhattisgarh	10819	83.9%	2.6%	5.0%	1.1%	6.0%	0.4%	11548	87.4%	3.2%	0.5%	8.7%	0.2%	2889	92.6%	1.9%	0.1%	5.1%	0.3%
D & N Haveli	148	81.8%	0.0%	3.4%	2.7%	8.1%	4.1%	94	80.9%	4.3%	2.1%	6.4%	6.4%	72	88.9%	2.8%	0.0%	4.2%	4.2%
Daman & Diu	95	87.4%	4.2%	3.2%	2.1%	3.2%	0.0%	70	72.9%	18.6%	0.0%	8.6%	0.0%	40	90.0%	7.5%	0.0%	2.5%	0.0%
Delhi	13717	85.3%	0.2%	2.6%	4.6%	5.6%	1.7%	9446	91.5%	1.9%	1.1%	4.4%	1.0%	13711	95.4%	0.9%	0.1%	2.8%	0.8%
Goa	637	71.7%	1.1%	4.1%	4.2%	16.6%	2.2%	543	76.4%	4.8%	0.9%	14.7%	3.1%	468	86.1%	2.4%	0.4%	9.4%	1.7%
Gujarat	33601	87.1%	0.4%	4.5%	2.5%	4.6%	1.0%	12746	83.5%	5.2%	1.1%	9.4%	0.8%	9236	87.6%	4.5%	0.2%	6.8%	0.8%
Haryana	13155	83.8%	0.9%	4.3%	3.5%	7.0%	0.5%	7388	85.7%	3.6%	1.6%	8.9%	0.3%	4961	92.8%	1.9%	0.3%	4.7%	0.4%
Himachal Pradesh	4966	87.6%	1.5%	3.4%	3.5%	3.7%	0.3%	2417	86.4%	5.5%	1.2%	6.5%	0.5%	2774	94.0%	2.4%	0.1%	3.3%	0.2%
Jammu & Kashmir	3629	85.3%	2.0%	4.9%	2.5%	4.2%	1.2%	2614	84.2%	5.6%	1.0%	8.0%	1.1%	2573	88.9%	4.5%	0.2%	4.6%	1.9%
Jharkhand	14037	85.3%	3.4%	4.3%	1.5%	4.8%	0.7%	12287	90.9%	2.4%	0.4%	5.7%	0.7%	1993	88.7%	2.5%	0.1%	3.9%	4.5%
Karnataka	25348	75.7%	2.0%	6.5%	3.1%	9.8%	2.9%	15281	79.6%	6.5%	0.9%	10.5%	2.5%	11428	86.3%	4.0%	0.2%	6.0%	3.4%
Kerala	10700	81.2%	2.3%	4.9%	4.6%	6.2%	0.8%	5474	87.8%	4.1%	0.5%	6.7%	0.9%	5992	89.3%	3.1%	0.2%	5.4%	2.0%
Lakshadweep	7	71.4%	0.0%	0.0%	0.0%	14.3%	14.3%	6	100.0%	0.0%	0.0%	0.0%	0.0%	2	100.0%	0.0%	0.0%	0.0%	0.0%
Madhya Pradesh	28740	82.5%	2.6%	4.6%	2.2%	7.6%	0.6%	23353	86.7%	2.6%	0.7%	9.5%	1.0%	7197	89.4%	2.1%	0.2%	6.0%	2.3%
Maharashtra	53827	85.2%	1.2%	5.4%	2.1%	5.2%	0.9%	39418	86.1%	4.1%	0.8%	8.2%	0.8%	20744	89.3%	2.8%	0.2%	6.4%	0.8%
Manipur	1141	84.6%	0.7%	2.1%	2.4%	9.9%	0.4%	1585	85.5%	2.0%	0.1%	12.1%	0.4%	871	86.8%	1.8%	0.0%	11.0%	0.3%
Meghalaya	1219	80.9%	0.7%	4.8%	7.0%	5.7%	0.9%	846	83.6%	5.4%	1.5%	8.6%	0.8%	815	91.2%	2.8%	0.5%	5.2%	0.4%
Mizoram	548	90.7%	0.2%	2.4%	4.7%	1.8%	0.2%	449	84.2%	6.0%	1.3%	8.5%	0.0%	591	94.4%	1.9%	0.2%	3.6%	0.0%
Nagaland	959	88.8%	0.7%	2.2%	3.0%	5.0%	0.1%	642	80.7%	2.5%	0.9%	15.7%	0.2%	461	87.4%	0.9%	0.9%	10.6%	0.2%
Orissa	19457	81.2%	4.8%	5.3%	1.3%	6.4%	1.0%	12220	86.5%	4.8%	0.3%	6.1%	2.4%	6786	89.8%	3.0%	0.1%	6.1%	1.0%
Puducherry	666	80.2%	0.5%	7.4%	3.8%	5.1%	3.0%	311	85.9%	9.6%	0.3%	3.2%	1.0%	284	95.4%	2.8%	0.0%	1.8%	0.0%

Treatment Outcome of New Cases for 2006 (Contd...)

Implementing states	New Smear Positive[1]							New Smear Negative[2]						New Extra Pulmonary[2]					
	Regis-tered	Cure	Comp-leted	Died	Failure	Defaulted	Trans out	Regis-tered	Comp-leted	Died	Failure	Defaulted	Trans out	Regis-tered	Comp-leted	Died	Failure	Defaulted	Trans out
Rajasthan	40142	87.0%	1.6%	3.5%	2.0%	5.7%	0.2%	31635	88.9%	2.6%	1.0%	7.4%	0.2%	12093	92.4%	1.7%	0.1%	5.0%	0.8%
Sikkim	505	85.7%	0.2%	3.2%	7.9%	2.4%	0.6%	273	93.0%	2.6%	2.6%	1.1%	0.7%	365	94.2%	2.7%	0.5%	1.6%	0.8%
Tamil Nadu	33314	82.2%	1.3%	5.6%	2.1%	8.0%	0.8%	24716	87.4%	4.9%	0.4%	6.5%	0.9%	17438	90.3%	3.6%	0.1%	4.2%	1.9%
Tripura	1255	86.3%	3.8%	4.1%	2.1%	3.5%	0.1%	477	84.9%	7.5%	0.8%	6.3%	0.4%	232	92.7%	2.6%	0.4%	3.9%	0.4%
Uttar Pradesh	91600	83.4%	2.9%	4.0%	1.4%	7.8%	0.5%	75077	87.7%	2.1%	0.6%	9.1%	0.4%	20135	92.5%	1.2%	0.1%	5.5%	0.7%
Uttarakhand	4277	88.5%	0.5%	2.8%	1.6%	6.0%	0.5%	3421	90.0%	2.0%	0.7%	6.8%	0.5%	1455	91.9%	0.9%	0.2%	6.3%	0.8%
West Bengal	50432	86.3%	0.7%	4.1%	2.4%	6.1%	0.4%	25466	86.6%	4.7%	0.8%	7.6%	0.3%	14607	90.7%	2.9%	0.2%	4.8%	0.9%
Grand Total	**553116**	**83.8%**	**2.1%**	**4.6%**	**2.3%**	**6.4%**	**0.8%**	**400317**	**86.9%**	**3.5%**	**0.7%**	**8.2%**	**0.7%**	**183673**	**90.2%**	**2.5%**	**0.2%**	**5.3%**	**1.3%**

1 Treatment success for New Smear Positive is cured and treatment completed.
2 Treatment success for New Smear Negative and New Extra Pulmonary are treatment completed.

Outcome of Smear Positive Re-treatment Cases for India 2006 (excluding "Others")

Type of re-treatment case	Cured	Success	Died	Failure	Defaulted	Transferred out	No. registered
Relapse	66.5%	72.9%	7.2%	4.9%	13.8%	1.2%	89766
Failure	50.2%	58.4%	8.7%	14.0%	17.8%	1.1%	19436
Treatment after default	57.8%	66.1%	8.0%	4.2%	19.3%	2.4%	76516
Total	**61.3%**	**68.6%**	**7.7%**	**5.6%**	**16.5%**	**1.7%**	**185718**

State-wise Outcome of Smear Positive Re-treatment Cases 2006 (excluding "Others")

Implementing states	Cured	Success	Died	Failure	Defaulted	Transferred out	No. registered
Andaman & Nicobar	70.7%	70.7%	10.7%	4.0%	10.7%	4.0%	75
Andhra Pradesh	57.2%	68.0%	9.4%	6.6%	14.5%	1.7%	14110
Arunachal Pradesh	61.6%	65.5%	8.8%	14.9%	10.1%	0.8%	388
Assam	54.9%	65.1%	8.8%	6.1%	17.5%	2.5%	3242
Bihar	59.2%	74.0%	7.5%	4.8%	12.4%	1.3%	6358
Chandigarh	76.5%	77.9%	5.9%	5.1%	5.5%	5.5%	272
Chhattisgarh	62.4%	72.1%	7.0%	3.5%	16.9%	0.6%	1700
D & N Haveli	70.8%	70.8%	8.3%	8.3%	10.4%	2.1%	48
Daman & Diu	81.1%	81.1%	5.4%	10.8%	2.7%	0.0%	37
Delhi	69.7%	70.3%	6.0%	7.4%	13.7%	2.5%	6562
Goa	52.1%	56.3%	11.3%	4.7%	26.3%	1.4%	213
Gujarat	60.9%	63.4%	8.7%	6.7%	19.1%	2.0%	17580
Haryana	64.4%	70.2%	6.8%	6.3%	16.0%	0.6%	7190
Himachal Pradesh	67.0%	74.3%	7.6%	8.6%	8.4%	1.1%	2432
Jammu & Kashmir	68.8%	76.3%	6.4%	5.1%	10.4%	1.8%	1057
Jharkhand	65.5%	77.1%	6.4%	4.0%	10.1%	2.2%	2759
Karnataka	46.9%	54.1%	9.7%	7.0%	23.4%	5.8%	9127
Kerala	58.6%	66.4%	8.5%	8.1%	15.3%	2.2%	2235
Lakshadweep							0
Madhya Pradesh	54.9%	67.0%	8.0%	5.5%	18.2%	1.3%	10997
Maharashtra	56.1%	61.5%	9.2%	6.4%	21.3%	1.5%	15110
Manipur	59.0%	62.5%	7.6%	7.6%	22.4%	0.0%	317
Meghalaya	48.1%	57.8%	7.3%	16.4%	15.7%	2.8%	536
Mizoram	65.4%	71.1%	5.0%	12.0%	8.2%	1.9%	159
Nagaland	69.7%	71.1%	3.8%	5.1%	19.7%	0.3%	370
Orissa	54.9%	66.9%	9.4%	4.1%	17.1%	2.5%	3521
Puducherry	50.2%	55.1%	8.3%	9.3%	25.4%	2.0%	205
Punjab	62.6%	71.6%	7.1%	5.6%	12.5%	3.3%	5150
Rajasthan	69.1%	76.9%	6.0%	4.0%	12.7%	0.5%	20365
Sikkim	63.1%	64.0%	7.0%	19.6%	6.5%	2.8%	214
Tamil Nadu	53.9%	60.1%	8.9%	5.8%	23.6%	1.7%	8659
Tripura	71.0%	80.2%	7.4%	3.5%	8.5%	0.4%	283
Uttar Pradesh	65.6%	74.0%	6.6%	3.4%	14.9%	1.1%	31123
Uttarakhand	73.7%	75.4%	4.6%	4.4%	14.0%	1.5%	2065
West Bengal	63.4%	67.1%	7.5%	6.7%	17.5%	1.2%	11259
Grand Total	**61.3%**	**68.6%**	**7.7%**	**5.6%**	**16.5%**	**1.7%**	**185718**

Values for grey areas are not expected

Programme Infrastructure, Staffing and Training Status in 4th Quarter 2007

Implementing states	Total no. of reporting units (Districts/ DTC)	Implementing district details		Involvement of other sectors			Number of key staff in position						In place and trained in RNTCP	
		No. of TB units	No. of DMCs	NGO	PP	Medical College	DTO	2nd MO	MO-TC	STS	STLS	LT	MO	MPW
Andaman & Nicobar	1	3	13	0	1	0	1	0	3	0	3	19	75%	70%
Andhra Pradesh	24	172	898	115	482	34	18	18	165	178	170	930	72%	87%
Arunachal Pradesh	13	13	33	20	10	0	13	3	6	13	13	33	85%	41%
Assam	23	65	333	65	256	3	23	8	57	63	67	351	80%	70%
Bihar	38	163	704	69	154	8	32	33	158	154	149	621	76%	86%
Chandigarh	1	2	15	19	195	2	1	0	2	2	4	15	89%	100%
Chhattisgarh	16	62	287	17	229	2	16	1	57	58	59	281	80%	91%
D & N Haveli	1	1	5	0	5	0	1	0	1	1	1	5	100%	100%
Daman & Diu	2	2	3	0	24	0	2	0	2	2	2	8	100%	94%
Delhi	24	36	184	100	364	5	24	19	23	44	43	181	78%	43%
Goa	2	3	18	8	7	1	2	0	2	5	3	38	95%	86%
Gujarat	29	132	694	265	4973	12	29	12	132	127	123	637	95%	90%
Haryana	20	47	209	28	353	3	17	8	44	43	45	198	88%	83%
Himachal Pradesh	12	41	166	13	53	2	12	3	36	41	42	192	83%	84%
Jammu & Kashmir	14	47	167	6	0	5	13	8	36	38	40	167	79%	58%
Jharkhand	22	64	297	77	65	3	20	11	55	57	58	326	81%	85%
Karnataka	28	122	629	551	1432	38	28	9	121	117	120	614	80%	84%
Kerala	14	67	461	61	986	18	14	13	62	65	69	531	77%	84%
Lakshadweep	1	1	9	0	1	0	1	1	1	0	0	13	57%	82%
Madhya Pradesh	45	142	725	65	306	9	42	7	129	139	140	723	82%	83%
Maharashtra	48	303	1085	315	4344	40	41	43	218	207	210	1167	76%	82%
Manipur	9	14	46	92	7	1	8	5	4	13	17	42	53%	69%
Meghalaya	7	11	49	22	26	0	5	5	10	11	11	60	89%	86%
Mizoram	8	9	25	2	0	0	8	1	2	9	9	51	56%	86%
Nagaland	8	10	37	20	18	0	7	1	1	10	11	36	70%	79%
Orissa	31	104	544	76	95	5	26	15	92	103	99	546	84%	85%
Puducherry	1	4	20	2	4	7	1	0	4	5	4	20	71%	86%
Punjab	20	57	288	214	712	7	20	2	52	54	56	315	86%	88%
Rajasthan	32	145	781	123	485	7	31	16	136	138	141	764	79%	76%
Sikkim	4	5	20	11	16	1	4	0	4	5	4	22	85%	83%
Tamil Nadu	30	142	782	232	950	19	27	26	125	128	142	695	82%	94%
Tripura	4	9	52	0	0	2	4	2	8	15	11	49	91%	94%
Uttar Pradesh	70	355	1598	213	751	18	59	106	326	342	336	1598	65%	60%
Uttarakhand	13	30	144	42	45	1	13	10	26	30	30	115	64%	63%
West Bengal	19	184	863	103	346	9	16	12	175	182	191	936	82%	94%
Grand Total	**634**	**2567**	**12184**	**2946**	**17695**	**262**	**579**	**398**	**2275**	**2399**	**2423**	**12299**	**79%**	**81%**

District-wise Performance of RNTCP Case Detection (2007), Smear Conversion (4th quarter 2006 and 1st to 3rd quarter 2007), and Treatment Outcomes (2006)

State	District	Population (in lakh) covered by RNTCP[1]	No. of TB suspects examined	Suspects examined per lakh population per quarter	% of S+ve TB cases among suspects	Total patients registered for treatment[3]	Annual total case detection rate	New smear positive patients registered for treatment	Annual new smear positive case detection rate (%)		% new sputum positive out of total new pulmonary cases	No. of new smear negative cases registered for treatment	No. of new EP cases registered for treatment	No. of smear positive re-treatment cases registered for treatment	% of re-treatment cases out of all smear positive cases	No. (%) of paediatric cases out of all new cases		3 month conversion rate of new smear positive patients[4]	Cure rate of new smear positive patients[5]	Treatment success rate of new smear positive patients[5]
Andaman & Nicobar																				
Andaman & Nicobar	Andaman & Nicobar Islands*	4	3728	232	9%	775	193	256	64	85%	51%	248	188	56	18%	102	15%	94%	86%	86%
Andhra Pradesh																				
Andhra Pradesh	Adilabad *	27	10559	99	20%	3038	114	1540	58	77%	64%	883	177	408	21%	60	2%	92%	87%	90%
Andhra Pradesh	Anantapur	39	30507	195	13%	6100	156	2684	69	92%	63%	1556	765	868	24%	170	3%	92%	86%	87%
Andhra Pradesh	Bhadrachalam	8	8574	256	15%	1813	217	853	102	136%	59%	582	75	292	26%	14	1%	93%	89%	91%
Andhra Pradesh	Chittoor	40	25302	158	14%	4588	114	1994	50	66%	61%	1262	597	561	22%	175	5%	89%	82%	86%
Andhra Pradesh	Cuddapah	28	15061	136	14%	4393	159	1558	56	75%	47%	1735	363	460	23%	87	2%	90%	84%	86%
Andhra Pradesh	East Godavari	52	31326	150	13%	7198	138	3178	61	81%	59%	2191	1007	562	15%	357	6%	94%	87%	90%
Andhra Pradesh	Guntur	47	41315	218	14%	6939	147	3248	69	92%	60%	2161	343	953	23%	144	3%	92%	80%	87%
Andhra Pradesh	Hyderabad	40	40883	258	15%	7147	181	2528	64	85%	61%	1625	1753	836	25%	442	7%	92%	87%	87%
Andhra Pradesh	Karimnagar	37	15342	103	16%	3695	99	1661	44	59%	58%	1189	172	634	28%	40	1%	92%	86%	89%
Andhra Pradesh	Khammam	19	13277	173	16%	3211	167	1521	79	106%	62%	941	258	473	24%	71	3%	93%	87%	88%
Andhra Pradesh	Krishna	45	25539	141	14%	5862	129	2555	56	75%	56%	1975	310	772	23%	156	3%	89%	86%	87%
Andhra Pradesh	Kurnool	38	19549	130	15%	5936	157	2050	54	72%	45%	2476	294	674	25%	235	5%	90%	83%	84%
Andhra Pradesh	Mahbubnagar	38	17756	118	16%	4321	115	2105	56	75%	63%	1219	219	702	25%	87	2%	91%	86%	87%
Andhra Pradesh	Medak	29	11390	100	16%	3291	115	1531	54	71%	66%	781	386	508	25%	152	6%	90%	84%	86%
Andhra Pradesh	Nalgonda	35	12870	93	22%	4180	120	1911	55	73%	65%	1042	264	917	32%	73	2%	89%	83%	86%
Andhra Pradesh	Nellore	29	16790	147	17%	4113	144	1810	63	85%	63%	1055	309	711	28%	80	3%	93%	87%	90%
Andhra Pradesh	Nizamabad	25	13607	135	12%	2908	116	1418	56	75%	55%	1169	153	164	10%	60	2%	93%	88%	89%
Andhra Pradesh	Prakasam	33	16248	124	14%	3978	121	1922	59	78%	60%	1277	139	509	21%	94	3%	90%	70%	85%
Andhra Pradesh	Rangareddi	38	22663	150	18%	5104	136	2298	61	81%	68%	1104	742	740	24%	162	4%	83%	77%	78%
Andhra Pradesh	Srikakulam	27	15968	147	13%	4063	150	1773	65	87%	56%	1407	466	295	14%	186	5%	92%	86%	90%
Andhra Pradesh	Visakhapatnam	41	26607	163	15%	5465	134	2561	63	84%	67%	1284	936	534	17%	240	5%	93%	88%	89%
Andhra Pradesh	Vizianagaram	24	15264	158	14%	3495	145	1687	70	93%	72%	666	585	459	21%	155	5%	92%	87%	89%

District-wise Performance of RNTCP (Contd.)

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Andhra Pradesh	Warangal	35	17895	129	19%	4309	124	2084	60	80%	66%	1062	225	868	29%	33	1%	92%	82%	83%
Andhra Pradesh	West Godavari	41	23857	146	15%	6157	151	2629	64	86%	58%	1921	468	756	22%	209	4%	96%	95%	95%
Arunachal Pradesh																				
Arunachal Pradesh	Changlang **	1	658	121	13%	154	113	70	52	69%	69%	32	10	24	26%	4	4%	80%	81%	83%
Arunachal Pradesh	Dibang Valley	1	594	238	9%	107	171	55	88	117%	74%	19	8	25	31%	1	1%	98%	94%	94%
Arunachal Pradesh	East Kameng *	1	748	302	10%	279	450	74	119	159%	58%	53	45	47	39%	11	6%	85%	79%	87%
Arunachal Pradesh	East Siang *	1	873	230	13%	206	217	83	87	117%	54%	72	21	30	27%	3	2%	91%	87%	88%
Arunachal Pradesh	Lohit **	2	1097	176	12%	247	159	116	74	99%	75%	38	29	43	27%	5	3%	92%	90%	90%
Arunachal Pradesh	Lower Subansiri *	1	432	102	15%	168	158	57	54	72%	66%	30	21	28	31%	7	6%	80%	75%	75%
Arunachal Pradesh	Papum Pare *	1	2774	524	15%	786	594	168	127	169%	38%	280	105	110	40%	44	8%	89%	87%	88%
Arunachal Pradesh	Tawang *	0.4	351	233	9%	87	231	23	61	81%	46%	27	17	9	28%	1	1%	97%	90%	90%
Arunachal Pradesh	Tirap †	1	785	180	10%	240	220	64	59	78%	50%	65	71	13	17%	27	14%	97%	85%	86%
Arunachal Pradesh	Upper Siang *	0.4	390	271	8%	63	175	30	83	111%	83%	6	12	14	32%	1	2%	74%	88%	94%
Arunachal Pradesh	Upper Subansiri *	1	496	208	13%	122	204	44	74	98%	59%	30	14	19	30%	7	8%	91%	79%	79%
Arunachal Pradesh	West Kameng *	1	547	169	11%	133	164	47	58	77%	49%	48	18	11	19%	14	12%	93%	84%	86%
Arunachal Pradesh	West Siang *	1	563	125	12%	154	137	59	52	70%	65%	32	10	20	23%	0	0%	90%	89%	91%
Assam																				
Assam	Barpeta	18	6502	89	15%	1592	88	795	44	58%	72%	309	186	188	19%	34	3%	84%	84%	85%
Assam	Bongaigaon	10	4523	113	15%	1115	111	539	54	72%	66%	282	66	124	19%	42	5%	91%	87%	87%
Assam	Cachar	16	7783	122	13%	1961	123	746	47	62%	48%	809	175	116	13%	34	2%	90%	84%	85%
Assam	Darrang	17	8216	123	13%	2009	121	873	52	70%	57%	652	168	181	17%	55	3%	93%	85%	86%
Assam	Dhemaji	6	2463	98	18%	718	114	359	57	76%	65%	195	50	85	19%	18	3%	92%	81%	82%
Assam	Dhubri	18	6284	87	18%	2114	117	841	47	62%	53%	751	87	218	21%	39	2%	88%	84%	86%
Assam	Dibrugarh	13	7835	151	19%	2380	184	1017	78	105%	69%	456	586	223	18%	173	8%	89%	87%	87%
Assam	Goalpara	9	3394	93	17%	863	95	481	53	70%	71%	192	54	78	14%	12	2%	90%	84%	84%
Assam	Golaghat	10	4345	104	17%	1299	124	608	58	77%	60%	407	120	102	14%	50	4%	92%	84%	86%

District-wise Performance of RNTCP (Contd.)

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Assam	Hailakandi	6	3471	144	11%	590	98	306	51	68%	66%	156	42	53	15%	7	1%	89%	80%	80%
Assam	Jorhat	11	4630	104	17%	1333	119	632	57	75%	66%	320	195	117	16%	45	4%	91%	81%	82%
Assam	Kamrup	28	13876	125	17%	3625	130	1353	49	65%	61%	853	492	579	30%	58	2%	90%	85%	86%
Assam	Karbi Anglong *	9	4113	114	15%	1468	163	476	53	71%	41%	697	70	92	16%	54	4%	89%	78%	81%
Assam	Karimganj	11	4900	110	12%	1076	97	469	42	56%	56%	365	90	61	12%	4	0%	89%	84%	87%
Assam	Kokrajhar	10	3654	89	19%	1350	131	652	63	84%	60%	428	33	122	16%	24	2%	91%	87%	87%
Assam	Lakhimpur	10	3686	94	22%	1136	115	633	64	86%	72%	242	80	120	16%	33	3%	91%	88%	89%
Assam	Marigaon	9	3737	109	16%	1011	118	445	52	69%	63%	263	57	145	25%	26	3%	93%	84%	84%
Assam	Nagaon	26	10868	106	16%	2901	113	1459	57	76%	60%	989	184	158	10%	62	2%	91%	86%	88%
Assam	Nalbari	13	4933	98	13%	1345	107	609	48	64%	63%	354	162	136	18%	39	3%	89%	89%	92%
Assam	North Cachar Hills *	2	1157	140	13%	257	125	108	52	70%	58%	79	19	35	24%	4	2%	86%	85%	87%
Assam	Sibsagar	12	5492	118	15%	1647	141	644	55	74%	61%	414	288	183	22%	89	7%	90%	86%	87%
Assam	Sonitpur	19	9817	132	18%	2924	158	1344	72	97%	60%	902	226	259	16%	102	4%	88%	85%	87%
Assam	Tinsukia	13	8244	162	17%	2052	161	935	73	98%	69%	421	356	222	19%	144	8%	90%	87%	87%
Bihar																				
Bihar	Araria **	24	7662	81	11%	1834	77	725	31	41%	52%	658	78	155	18%	30	2%	80%	67%	70%
Bihar	Arwal	7	2936	108	11%	700	103	257	38	50%	45%	320	34	80	24%	20	3%	87%	84%	90%
Bihar	Aurangabad-BI **	22	6491	73	17%	1975	88	870	39	52%	63%	514	281	225	21%	100	6%	84%	78%	81%
Bihar	Banka **	18	5708	80	17%	1773	99	800	45	60%	64%	455	29	189	19%	32	2%	90%	75%	77%
Bihar	Begusarai **	26	9054	87	10%	2813	108	734	28	37%	32%	1554	135	176	19%	187	8%	83%	79%	85%
Bihar	Bhagalpur **	27	17239	159	10%	3876	143	1384	51	68%	46%	1607	374	266	16%	401	12%	90%	84%	87%
Bihar	Bhojpur **	25	5798	58	11%	1229	49	451	18	24%	48%	484	38	144	24%	37	4%	69%	65%	74%
Bihar	Buxar	16	3038	49	15%	1063	68	337	22	29%	47%	387	31	113	25%	22	3%	87%	84%	86%
Bihar	Darbhanga **	37	11172	76	16%	2894	79	1169	32	43%	68%	556	507	435	27%	193	9%	92%	84%	86%
Bihar	Gaya **	39	10250	66	16%	3440	89	1104	29	38%	40%	1651	111	252	19%	97	3%	79%	68%	87%
Bihar	Gopalganj **	24	6332	66	18%	2382	99	853	36	47%	65%	465	85	289	25%	80	6%	80%	77%	83%

District-wise Performance of RNTCP (Contd.)

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Bihar	Jamui **	16	2987	48	19%	1173	75	473	30	41%	50%	475	36	107	18%	49	5%	77%	66%	74%
Bihar	Jehanabad **	10	4176	104	13%	881	88	370	37	49%	57%	284	51	122	25%	59	8%	88%	76%	83%
Bihar	Kaimur **	14	4030	70	17%	1047	73	449	31	42%	67%	219	22	202	31%	19	3%	80%	77%	78%
Bihar	Katihar **	27	9258	87	19%	2523	95	1317	49	66%	67%	656	111	338	20%	116	6%	82%	77%	79%
Bihar	Khagaria **	14	4669	82	11%	793	56	375	26	35%	73%	140	60	153	29%	33	6%	71%	60%	69%
Bihar	Kishanganj **	14	4966	86	13%	874	61	448	31	41%	71%	180	21	151	25%	23	4%	86%	60%	74%
Bihar	Lakhisarai **	9	2170	61	14%	666	75	222	25	33%	48%	241	47	67	23%	32	6%	88%	79%	82%
Bihar	Madhepura **	17	5538	82	13%	1084	64	569	33	45%	63%	337	37	105	16%	32	3%	93%	85%	91%
Bihar	Madhubani **	40	10115	64	13%	2012	51	1125	28	38%	70%	482	76	246	18%	26	2%	87%	76%	87%
Bihar	Munger **	13	5574	110	14%	1435	113	645	51	68%	59%	442	172	122	16%	82	7%	92%	85%	88%
Bihar	Muzaffarpur **	42	16046	96	17%	5609	134	1853	44	59%	41%	2649	334	488	21%	223	5%	91%	83%	87%
Bihar	Nalanda **	26	6445	61	17%	1895	72	882	33	45%	59%	616	116	161	15%	41	3%	94%	85%	86%
Bihar	Nawada **	20	4814	60	16%	1095	54	617	31	41%	72%	237	53	122	17%	40	4%	93%	88%	89%
Bihar	Paschim Champaran **	34	9134	67	12%	1807	53	758	22	30%	66%	385	142	312	29%	57	4%	80%	52%	69%
Bihar	Patna	52	25116	120	16%	7501	143	2697	51	69%	49%	2840	832	512	16%	762	12%	87%	79%	88%
Bihar	Purba Champaran **	44	10005	57	14%	2472	56	943	22	29%	55%	762	88	341	27%	47	3%	91%	82%	86%
Bihar	Purnia **	28	13870	122	12%	2850	101	1236	44	58%	56%	973	65	295	19%	60	3%	90%	88%	90%
Bihar	Rohtas	27	9997	92	13%	2090	77	855	31	42%	59%	602	41	339	28%	55	4%	86%	76%	81%
Bihar	Saharsa **	17	4963	74	12%	1148	68	430	26	34%	44%	540	28	75	15%	32	3%	91%	63%	78%
Bihar	Samastipur **	38	11561	76	16%	4021	106	1371	36	48%	46%	1605	415	338	20%	197	6%	80%	77%	86%
Bihar	Saran **	36	8697	60	15%	2235	62	1026	28	38%	66%	537	174	253	20%	104	6%	79%	64%	73%
Bihar	Sheikpura	6	1872	80	11%	538	92	140	24	32%	40%	212	27	88	39%	28	7%	87%	77%	77%
Bihar	Sheohar	6	1207	53	13%	420	73	106	18	25%	36%	188	18	41	28%	12	4%	85%	63%	90%
Bihar	Sitamarhi **	30	8368	70	17%	2449	82	1148	39	51%	55%	938	85	164	13%	99	5%	77%	61%	68%
Bihar	Siwan	30	6756	56	17%	2524	84	751	25	33%	45%	908	53	325	30%	63	4%	84%	64%	77%
Bihar	Supaul **	19	5052	65	10%	1006	52	375	19	26%	54%	314	19	122	25%	17	2%	76%	59%	86%

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Bihar	Vaishali **	30	10551	87	13%	3492	116	969	32	43%	37%	1621	196	312	24%	187	7%	75%	51%	88%
Chandigarh																				
Chandigarh	Chandigarh	10	13934	336	12%	2411	232	736	71	75%	60%	489	721	299	29%	205	11%	92%	86%	86%
Chhattisgarh																				
Chhattisgarh	Bastar *	15	6394	110	12%	1821	125	577	40	50%	40%	871	151	89	13%	26	2%	85%	81%	88%
Chhattisgarh	Bilaspur-CG	22	11628	130	12%	2684	120	1117	50	63%	55%	911	382	213	16%	173	7%	91%	86%	88%
Chhattisgarh	Dantewada *	8	4204	131	14%	858	107	465	58	72%	65%	254	76	50	10%	22	3%	77%	72%	80%
Chhattisgarh	Dhamtari	8	3414	108	13%	701	89	347	44	55%	63%	203	61	80	19%	18	3%	85%	81%	83%
Chhattisgarh	Durg	31	16127	129	10%	4031	129	1379	44	55%	45%	1680	725	184	12%	194	5%	89%	86%	88%
Chhattisgarh	Janjgir	15	6698	114	10%	1590	108	638	43	54%	46%	737	106	66	9%	41	3%	96%	89%	89%
Chhattisgarh	Jashpur *	8	2405	73	12%	579	70	228	28	34%	47%	254	54	24	10%	6	1%	85%	79%	85%
Chhattisgarh	Kanker *	7	4177	143	11%	962	132	405	56	70%	52%	377	66	58	13%	23	3%	94%	85%	88%
Chhattisgarh	Kawardha **	7	3138	120	11%	610	93	250	38	48%	57%	192	54	79	24%	33	7%	88%	94%	94%
Chhattisgarh	Korba	11	5634	124	11%	1353	120	500	44	55%	47%	555	123	84	14%	48	4%	95%	91%	91%
Chhattisgarh	Koriya **	7	2936	112	13%	774	118	291	44	56%	54%	248	93	94	24%	32	5%	87%	69%	73%
Chhattisgarh	Mahasamund	10	4182	109	11%	999	104	398	41	52%	47%	443	87	58	13%	57	6%	90%	83%	83%
Chhattisgarh	Raigarh-CG **	14	5120	90	15%	1502	106	630	45	56%	46%	729	45	60	9%	10	1%	83%	82%	87%
Chhattisgarh	Raipur	34	17009	126	13%	4182	124	1774	53	66%	54%	1498	475	299	14%	163	4%	90%	81%	83%
Chhattisgarh	Rajnandgaon	14	6527	114	14%	2001	140	784	55	68%	52%	723	230	157	17%	194	11%	87%	84%	86%
Chhattisgarh	Surguja †	22	9629	109	10%	2857	130	815	37	46%	37%	1417	253	133	14%	223	9%	93%	91%	92%
D & N Haveli																				
D & N Haveli	Dadra & Nagar Haveli †	3	1712	168	12%	390	153	127	50	62%	61%	82	68	53	29%	16	6%	94%	82%	82%
Daman & Diu																				
Daman & Diu	Daman	1	2201	417	9%	289	219	79	60	75%	48%	87	19	36	31%	0	0%	95%	91%	96%
Daman & Diu	Diu	1	778	381	6%	48	94	19	37	47%	70%	8	8	11	37%	1	3%	63%	74%	74%

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Delhi																				
Delhi	BJRM Chest Clinic	5	4206	216	16%	1329	273	409	84	88%	61%	259	302	234	36%	158	16%	92%	90%	90%
Delhi	BSA Chest Clinic	5	2058	106	14%	881	181	216	44	47%	52%	203	294	103	32%	100	14%	93%		
Delhi	CD Chest Clinic	5	3040	156	12%	714	147	163	33	35%	45%	196	238	70	30%	72	12%	88%		
Delhi	DDU Chest Clinic	19	11554	156	16%	5052	273	1256	68	71%	56%	986	1661	597	32%	519	13%	90%	85%	86%
Delhi	GTB Chest Clinic	6	8935	382	15%	1967	336	595	102	107%	68%	277	631	283	32%	246	16%	87%	82%	82%
Delhi	Gulabi Bagh	10	7239	186	14%	1774	182	537	55	58%	63%	321	551	267	33%	154	11%	88%	85%	85%
Delhi	Hedgewar C Clinic	5	4021	206	16%	1474	303	407	84	88%	67%	199	540	167	29%	200	17%	90%	83%	84%
Delhi	Jhandewalan	5	4282	220	17%	1542	317	433	89	94%	66%	220	441	246	36%	131	12%	87%	83%	83%
Delhi	Karawal Nagar	6	5292	226	20%	2779	475	801	137	144%	59%	551	855	355	31%	346	16%	86%	82%	83%
Delhi	Kingsway Camp	5	5669	291	16%	1840	378	554	114	120%	57%	413	489	254	31%	154	11%	90%	86%	86%
Delhi	LN Chest Clinic	5	6311	324	14%	1085	223	303	62	65%	69%	133	379	160	35%	133	16%	87%	88%	88%
Delhi	LRS	10	5309	136	12%	2490	256	749	77	81%	65%	406	707	401	35%	260	14%	89%	88%	88%
Delhi	MNCH Chest Clinic	10	4429	114	15%	2777	285	730	75	79%	57%	540	862	415	36%	348	16%	92%		
Delhi	Moti Nagar	6	7434	318	14%	1715	293	404	69	73%	53%	360	585	167	29%	210	16%	90%	83%	83%
Delhi	Narela	6	5898	252	15%	1372	235	450	77	81%	68%	210	374	237	34%	157	15%	87%	84%	84%
Delhi	NDMC	8	13600	436	15%	1556	200	374	48	51%	56%	298	537	205	35%	186	15%	91%	88%	88%
Delhi	Nehru Nagar	10	10094	259	17%	3691	379	1039	107	112%	59%	710	1183	493	32%	418	14%	88%	83%	83%
Delhi	Patparganj	7	8166	299	19%	2667	391	822	121	127%	67%	410	868	413	33%	313	15%	90%	87%	87%
Delhi	RK Mission	6	6538	280	15%	2018	345	612	105	110%	58%	442	594	257	30%	239	15%	92%	90%	90%
Delhi	RTRM Chest Clinic	10	6850	176	14%	1775	182	560	57	60%	66%	285	476	295	35%	160	12%	89%	88%	88%
Delhi	SGM Chest Clinic	6	9415	403	15%	3526	603	879	150	158%	52%	796	1111	424	33%	413	15%	92%	87%	87%

District-wise Performance of RNTCP (Contd.)

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Delhi	Shahadra	5	8756	449	17%	2170	445	642	132	139%	65%	339	721	294	31%	290	17%	87%	80%	80%
Delhi	SPM Marg	5	3675	189	17%	1198	246	339	70	73%	60%	223	355	155	31%	110	12%	88%	86%	86%
Delhi	SPMH Chest Clinic	5	3703	190	15%	1666	342	421	86	91%	61%	270	614	184	30%	237	18%	89%		
Goa																				
Goa	North Goa	9	7838	220	9%	1161	130	363	41	51%	55%	292	310	113	24%	82	8%	87%	74%	76%
Goa	South Goa	7	3693	134	12%	943	137	282	41	51%	50%	282	200	113	29%	119	16%	85%	68%	68%
Gujarat																				
Gujarat	Ahmedabad	15	10705	180	16%	1953	131	831	56	70%	72%	324	235	370	31%	73	5%	92%	86%	86%
Gujarat	AMC	49	33238	170	18%	9471	193	2863	58	73%	70%	1235	2282	2047	42%	773	12%	89%	86%	86%
Gujarat	Amreli	15	9390	153	14%	1660	108	879	57	72%	85%	161	158	406	32%	45	4%	91%	88%	89%
Gujarat	Anand	20	13042	160	20%	3200	157	1380	68	85%	72%	526	341	722	34%	88	4%	93%	88%	89%
Gujarat	Banas Kantha	28	16997	154	21%	4430	161	1688	61	77%	68%	785	300	1127	40%	156	6%	92%	87%	87%
Gujarat	Bharuch	21	12615	152	18%	2743	132	1448	70	87%	78%	405	248	468	24%	78	4%	94%	90%	91%
Gujarat	Bhavnagar	27	13122	121	20%	3349	123	1523	56	70%	78%	419	464	705	32%	192	8%	92%	90%	90%
Gujarat	Chhota Udepur	10	4813	120	21%	1282	128	710	71	89%	84%	135	99	286	29%	33	3%	92%	88%	89%
Gujarat	Dahod *	18	16309	227	17%	3556	198	1591	89	111%	76%	502	201	959	38%	170	7%	94%	88%	89%
Gujarat	Gandhinagar	15	9270	158	16%	1944	133	841	57	72%	78%	242	253	450	35%	88	7%	93%	87%	87%
Gujarat	Jamnagar	21	11853	141	14%	2506	119	1213	58	72%	83%	257	371	524	30%	136	7%	91%	88%	89%
Gujarat	Junagadh	27	15994	149	13%	3097	115	1484	55	69%	75%	507	300	659	31%	101	4%	89%	85%	87%
Gujarat	Kachchh	17	9740	145	16%	1989	119	890	53	66%	80%	217	162	494	36%	52	4%	90%	87%	87%
Gujarat	Kheda	22	11082	125	25%	3123	140	1478	66	83%	78%	422	224	833	36%	64	3%	91%	86%	86%
Gujarat	Mahesana	20	11999	149	16%	2470	122	1180	58	73%	75%	398	251	475	29%	72	4%	91%	85%	86%
Gujarat	Navsari	14	6823	126	18%	1660	123	803	59	74%	76%	252	229	290	27%	58	5%	90%	86%	86%
Gujarat	Panch Mahals	22	16656	187	23%	4413	198	2141	96	120%	79%	573	252	1233	37%	118	4%	94%	88%	88%
Gujarat	Patan	13	8523	164	17%	1715	132	767	59	74%	75%	256	148	429	36%	58	5%	90%	85%	85%
Gujarat	Porbandar	6	3212	136	13%	705	119	338	57	72%	65%	182	65	82	20%	51	9%	95%	89%	89%

District-wise Performance of RNTCP (Contd.)

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Gujarat	Rajkot	35	20504	148	15%	4058	117	1978	57	71%	81%	451	657	728	27%	184	6%	92%	87%	87%
Gujarat	Sabar Kantha	23	16121	176	19%	4134	181	1513	66	83%	60%	1011	315	918	38%	147	5%	92%	87%	88%
Gujarat	Surat	17	9744	146	19%	2026	122	934	56	70%	78%	269	343	310	25%	99	6%	93%	87%	88%
Gujarat	Surat Municipal Corp	27	20621	193	13%	4842	181	1636	61	76%	72%	625	1244	703	30%	378	11%	90%	87%	87%
Gujarat	Surendranagar	17	10919	164	18%	2068	124	952	57	71%	77%	292	279	446	32%	65	4%	90%	86%	87%
Gujarat	The Dangs *	2	1662	202	10%	212	103	127	62	77%	86%	20	14	41	24%	4	2%	94%	89%	91%
Gujarat	Vadodara	16	9128	146	18%	2187	140	986	63	79%	73%	362	234	457	32%	61	4%	93%	87%	87%
Gujarat	Vadodara Corp	14	8716	152	24%	2176	152	915	64	80%	74%	322	342	396	30%	84	5%	91%	86%	86%
Gujarat	Valsad *	16	8816	142	13%	1787	115	877	57	71%	74%	305	235	214	20%	80	6%	91%	86%	86%
Gujarat	Vyara(Surat)	12	6062	132	20%	1643	143	890	77	97%	78%	244	134	311	26%	40	3%	91%	85%	86%
Haryana																				
Haryana	Ambala	11	10144	225	12%	1473	131	586	52	55%	71%	243	270	275	32%	63	6%	93%	86%	86%
Haryana	Bhiwani	16	9446	149	18%	2324	147	925	58	62%	68%	437	152	634	41%	89	6%	91%	85%	86%
Haryana	Faridabad	22	13452	152	13%	3811	173	1185	54	56%	52%	1096	799	568	32%	177	6%	89%	85%	85%
Haryana	Fatehabad	9	5457	152	17%	1223	137	519	58	61%	68%	248	118	260	33%	44	5%	89%	82%	84%
Haryana	Gurgaon	11	9198	209	13%	1756	160	673	61	64%	75%	221	425	365	35%	97	7%	89%	80%	81%
Haryana	Hisar	17	10740	157	20%	2277	133	919	54	57%	71%	371	258	625	40%	80	5%	88%	81%	81%
Haryana	Jhajjar	10	4333	110	15%	1657	168	632	64	68%	66%	321	319	335	35%	71	6%	91%	84%	84%
Haryana	Jind	13	9506	180	14%	1899	144	809	61	64%	75%	266	284	460	36%	80	6%	92%	86%	86%
Haryana	Kaithal **	11	5713	136	14%	1483	141	583	56	58%	66%	306	212	334	36%	62	6%	88%	84%	85%
Haryana	Karnal	14	9435	167	15%	2207	156	848	60	63%	60%	556	304	362	30%	79	5%	91%	86%	86%
Haryana	Kurukshetra	9	6732	183	12%	1200	131	460	50	53%	63%	266	188	215	32%	42	5%	91%	85%	85%
Haryana	Mahendragarh	9	6419	178	14%	1418	157	493	55	58%	60%	326	210	286	37%	93	9%	90%	84%	84%
Haryana	Mewat**	10	5268	136	19%	1479	153	565	58	62%	68%	266	151	412	42%	65	7%	91%	84%	84%
Haryana	Panchkula	5	4430	213	12%	890	171	320	61	65%	66%	163	195	124	28%	60	9%	90%	87%	87%
Haryana	Panipat	11	6250	145	14%	1912	178	561	52	55%	47%	643	225	284	34%	89	6%	87%	84%	87%

District-wise Performance of RNTCP (Contd.)

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Haryana	Rewari	8	4306	127	15%	1159	136	356	42	44%	57%	267	192	265	43%	46	6%	86%	78%	84%
Haryana	Rohtak	10	20022	480	12%	1961	188	711	68	72%	68%	327	460	390	35%	107	7%	87%	85%	86%
Haryana	Sirsa	12	7018	142	17%	1635	133	677	55	58%	75%	223	177	441	39%	64	6%	84%	79%	80%
Haryana	Sonipat	14	7406	130	13%	2466	174	732	52	54%	49%	758	420	374	34%	99	5%	90%	84%	86%
Haryana	Yamunanagar	11	6986	160	12%	1361	125	562	52	54%	65%	303	170	212	27%	37	4%	92%	87%	88%
Himachal Pradesh																				
Himachal Pradesh	Bilaspur-HP	4	2981	205	15%	684	188	293	81	85%	64%	167	36	162	36%	4	1%	93%	86%	87%
Himachal Pradesh	Chamba	5	3906	199	16%	1273	259	406	83	87%	63%	242	297	274	40%	50	5%	93%	85%	88%
Himachal Pradesh	Hamirpur-HP **	4	4474	254	9%	785	178	283	64	68%	58%	209	158	110	28%	7	1%	94%	90%	90%
Himachal Pradesh	Kangra	14	10037	176	16%	2593	181	964	67	71%	67%	478	640	406	30%	20	1%	90%	88%	89%
Himachal Pradesh	Kinnaur *	1	531	148	12%	199	222	69	77	81%	66%	35	49	32	31%	6	4%	91%	80%	85%
Himachal Pradesh	Kullu	4	5406	333	13%	1349	333	429	106	111%	60%	283	318	266	38%	74	7%	92%	88%	89%
Himachal Pradesh	Lahaul & Spiti *	0.4	966	681	4%	127	358	20	56	59%	33%	41	38	13	39%	7	7%	96%	90%	90%
Himachal Pradesh	Mandi	10	9523	248	12%	2095	218	797	83	87%	66%	419	361	457	36%	26	2%	93%	87%	90%
Himachal Pradesh	Shimla	8	9350	303	13%	1690	219	570	74	78%	66%	295	468	277	33%	51	4%	96%	92%	92%
Himachal Pradesh	Sirmaur	5	4954	253	12%	985	201	392	80	84%	75%	133	236	193	33%	56	7%	93%	87%	90%
Himachal Pradesh	Solan	5	7563	355	12%	1135	213	482	90	95%	72%	187	231	181	27%	61	7%	91%	86%	87%
Himachal Pradesh	Una	5	3529	184	11%	696	146	273	57	60%	67%	132	116	127	32%	7	1%	95%	87%	87%
Jammu & Kashmir																				
Jammu & Kashmir	Anantnag	14	9012	162	5%	804	58	389	28	29%	78%	107	245	57	13%	52	7%	90%	84%	86%
Jammu & Kashmir	Badgam	7	6651	236	6%	584	83	392	56	58%	85%	68	94	25	6%	22	4%	92%	88%	89%
Jammu & Kashmir	Baramula	14	7703	139	7%	956	69	447	32	34%	78%	128	254	101	18%	34	4%	95%	93%	94%
Jammu & Kashmir	Doda	8	4187	127	12%	1069	130	341	42	44%	59%	238	273	150	31%	49	6%	81%	82%	85%
Jammu & Kashmir	Jammu	19	12480	167	14%	2685	144	883	47	50%	58%	629	620	446	34%	82	4%	87%	81%	85%
Jammu & Kashmir	Kargil *	1	1126	205	5%	155	113	39	28	30%	37%	67	31	15	28%	8	6%	84%	90%	90%
Jammu & Kashmir	Kathua	6	4219	163	13%	1086	168	364	56	59%	55%	300	158	196	35%	23	3%	92%	82%	83%
Jammu & Kashmir	Kupwara	8	5784	190	6%	748	98	377	50	52%	75%	125	193	39	9%	13	2%	93%	89%	89%

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Jammu & Kashmir	Leh *	1	1262	226	5%	176	126	49	35	37%	65%	26	83	18	27%	2	1%	65%	71%	73%
Jammu & Kashmir	Poonch	4	2543	144	8%	528	120	185	42	44%	51%	181	98	30	14%	32	7%	89%	88%	88%
Jammu & Kashmir	Pulwama	8	4733	157	7%	683	91	346	46	48%	70%	151	138	38	10%	26	4%	94%	92%	92%
Jammu & Kashmir	Rajouri	6	3581	157	8%	648	114	222	39	41%	59%	154	185	68	23%	30	5%	91%	80%	84%
Jammu & Kashmir	Srinagar	15	8018	136	8%	1131	77	531	36	38%	80%	131	368	82	13%	59	6%	91%	89%	89%
Jammu & Kashmir	Udhampur	9	5982	170	9%	1139	130	367	42	44%	61%	233	286	206	36%	42	5%	91%	85%	88%
Jharkhand																				
Jharkhand	Bokaro	20	10355	133	16%	2816	144	1304	67	89%	61%	851	270	221	14%	68	3%	92%	87%	88%
Jharkhand	Chatra **	9	3133	90	17%	856	98	446	51	68%	61%	288	15	66	13%	3	0%	93%	89%	89%
Jharkhand	Deoghar **	13	5454	107	16%	1229	96	675	53	70%	70%	284	70	130	16%	47	5%	94%	88%	90%
Jharkhand	Dhanbad	26	9156	87	16%	2735	104	1167	44	59%	55%	954	163	193	14%	157	7%	92%	86%	88%
Jharkhand	Dumka **	12	6640	137	19%	2629	217	965	80	106%	51%	930	25	251	21%	39	2%	93%	89%	92%
Jharkhand	Garhwa	11	5099	112	15%	1691	149	592	52	69%	47%	680	94	108	15%	117	9%	92%	88%	90%
Jharkhand	Giridih **	21	7127	85	20%	2013	96	991	47	63%	65%	541	66	351	26%	89	6%	91%	83%	92%
Jharkhand	Godda **	12	2929	64	17%	820	71	400	35	46%	59%	280	16	73	15%	19	3%	66%	72%	89%
Jharkhand	Gumla †	9	3683	102	14%	942	104	430	47	63%	55%	354	31	75	15%	24	3%	95%	90%	94%
Jharkhand	Hazaribagh **	25	13694	137	13%	2989	119	1518	61	81%	62%	913	191	225	13%	201	8%	88%	86%	92%
Jharkhand	Jamtara **	7	3328	116	16%	860	120	443	62	82%	68%	206	21	70	14%	12	2%	92%	90%	91%
Jharkhand	Kodarma **	5	1543	70	11%	300	55	118	22	29%	53%	105	15	43	27%	12	5%	63%	36%	51%
Jharkhand	Lathehar **	6	3709	145	14%	881	138	427	67	89%	62%	267	58	93	18%	70	9%	90%	90%	92%
Jharkhand	Lohardaga *	4	1569	98	15%	398	99	182	45	61%	69%	80	72	48	21%	41	12%	81%	83%	84%
Jharkhand	Pakaur **	8	3119	101	18%	785	102	396	51	68%	65%	209	19	87	18%	31	5%	87%	83%	84%
Jharkhand	Palamu **	17	10838	163	13%	2806	169	1163	70	93%	51%	1128	273	200	15%	233	9%	95%	92%	93%
Jharkhand	Pashchimi Singhbhum *	14	3820	67	23%	1793	125	786	55	73%	51%	762	110	82	9%	49	3%	87%	86%	88%
Jharkhand	Purbi Singhbhum †	22	8701	100	21%	2879	132	1350	62	83%	65%	738	300	327	19%	141	6%	90%	85%	88%

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Jharkhand	Ranchi †	31	12450	102	18%	3959	129	1616	53	70%	58%	1168	643	262	14%	277	8%	91%	84%	85%
Jharkhand	Sahibganj **	10	4608	113	12%	1252	123	422	41	55%	41%	605	52	55	12%	33	3%	77%	80%	88%
Jharkhand	Saraikela-Kharsawan **	9	3580	105	14%	986	115	496	58	77%	61%	311	74	48	9%	23	3%	92%	86%	87%
Jharkhand	Simdega **	6	1922	84	18%	514	90	277	48	64%	70%	120	32	63	19%	23	5%	88%	83%	83%
Karnataka																				
Karnataka	Bagalkot	18	12937	182	9%	1916	108	777	44	58%	57%	595	183	263	25%	78	5%	79%	70%	73%
Karnataka	Bangalore City	45	41839	233	14%	6737	150	1993	44	59%	58%	1454	1769	1022	34%	459	9%	73%	65%	67%
Karnataka	Bangalore Rural	20	10637	132	9%	2162	107	850	42	56%	63%	501	438	281	25%	113	6%	84%	78%	81%
Karnataka	Bangalore U	25	8136	80	12%	3325	131	1167	46	61%	65%	635	884	432	27%	176	7%	82%	73%	77%
Karnataka	Belgaum	45	25848	143	9%	4504	99	1655	37	49%	55%	1344	811	455	22%	389	10%	86%	74%	77%
Karnataka	Bellary	22	16894	194	16%	3325	152	1443	66	88%	65%	781	523	475	25%	224	8%	81%	70%	71%
Karnataka	Bidar **	16	6381	99	14%	1582	98	566	35	47%	57%	422	184	304	35%	42	4%	83%	76%	77%
Karnataka	Bijapur	19	9753	125	13%	2303	118	701	36	48%	47%	791	192	405	37%	104	6%	67%	55%	62%
Karnataka	Chamarajanagar	10	6944	167	10%	1496	144	569	55	73%	66%	291	327	259	31%	93	8%	85%	78%	80%
Karnataka	Chikmagalur	12	9673	197	7%	1170	95	428	35	47%	62%	267	280	138	24%	70	7%	89%	85%	86%
Karnataka	Chitradurga	16	10609	163	12%	2269	140	971	60	80%	60%	648	311	249	20%	70	4%	87%	79%	80%
Karnataka	Dakshina Kannada	20	14364	176	11%	2061	101	873	43	57%	74%	307	381	339	28%	91	6%	81%	76%	76%
Karnataka	Davanagere	19	11498	149	14%	2603	135	955	50	66%	57%	732	434	300	24%	76	4%	88%	78%	79%
Karnataka	Dharwad	17	12367	179	11%	2011	116	708	41	55%	71%	287	649	287	29%	117	7%	88%	80%	81%
Karnataka	Gadag	10	6899	165	13%	1031	99	445	43	57%	74%	158	158	213	32%	40	5%	86%	71%	73%
Karnataka	Gulbarga **	34	17370	129	13%	3688	110	1366	41	54%	59%	966	349	728	35%	108	4%	78%	72%	73%
Karnataka	Hassan	19	13733	185	7%	1755	95	755	41	54%	65%	403	306	193	20%	62	4%	91%	84%	85%
Karnataka	Haveri	15	10616	171	9%	1682	109	648	42	56%	63%	388	271	265	29%	62	5%	83%	72%	79%
Karnataka	Kodagu	6	4840	206	5%	423	72	181	31	41%	69%	80	108	35	16%	22	6%	88%	86%	88%
Karnataka	Kolar	27	20271	187	11%	3352	123	1429	53	70%	66%	746	646	412	22%	155	5%	88%	83%	84%

District-wise Performance of RNTCP (Contd.)

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Karnataka	Koppal	13	9067	176	14%	1786	139	866	67	90%	71%	355	153	333	28%	93	7%	88%	78%	81%
Karnataka	Mandya	19	20480	270	8%	2576	136	1046	55	74%	71%	426	581	391	27%	152	7%	86%	80%	80%
Karnataka	Mysore	28	26140	231	11%	3711	131	1396	49	66%	64%	770	773	604	30%	195	7%	87%	81%	82%
Karnataka	Raichur	18	11549	163	18%	3032	171	1332	75	100%	64%	737	209	507	28%	118	5%	86%	82%	82%
Karnataka	Shimoga	18	10244	145	8%	1756	99	602	34	45%	46%	701	269	141	19%	88	6%	93%	86%	86%
Karnataka	Tumkur	28	18506	167	11%	3026	109	1317	47	63%	70%	559	635	365	21%	123	5%	85%	81%	82%
Karnataka	Udupi	12	9798	205	8%	1194	100	501	42	56%	71%	201	254	173	26%	78	8%	86%	87%	87%
Karnataka	Uttara Kannada	15	6885	118	8%	1154	79	416	29	38%	55%	339	193	137	25%	49	5%	82%	58%	73%
Kerala																				
Kerala	Alappuzha	22	19391	216	4%	1841	82	744	33	66%	58%	528	388	142	16%	264	16%	87%	84%	87%
Kerala	Ernakulam	33	22318	169	7%	2383	72	1155	35	70%	73%	434	398	317	22%	94	5%	81%	81%	83%
Kerala	Idukki	12	9282	193	4%	644	54	306	25	51%	72%	117	157	46	13%	31	5%	82%	86%	86%
Kerala	Kannur	26	18761	183	6%	1784	69	740	29	58%	73%	268	521	182	20%	97	6%	84%	80%	81%
Kerala	Kasaragod	13	7465	146	7%	935	73	410	32	64%	70%	177	185	149	27%	53	7%	82%	77%	79%
Kerala	Kollam	28	16516	150	7%	1912	69	916	33	67%	71%	381	376	172	16%	134	8%	88%	84%	85%
Kerala	Kottayam	21	22487	270	6%	1831	88	912	44	88%	74%	315	393	175	16%	162	10%	87%	80%	83%
Kerala	Kozhikode	31	22657	185	5%	2395	78	922	30	60%	64%	521	712	184	17%	287	13%	84%	84%	87%
Kerala	Malappuram	39	19849	128	5%	2006	52	842	22	44%	69%	387	536	182	18%	71	4%	86%	84%	87%
Kerala	Palakkad	28	15371	138	8%	1950	70	941	34	68%	76%	302	452	222	19%	96	6%	86%	79%	83%
Kerala	Pathanamthitta	13	8045	153	8%	916	70	515	39	79%	86%	81	198	106	17%	30	4%	86%	84%	86%
Kerala	Thiruvanantha-puram	34	32219	234	5%	2690	78	1133	33	66%	65%	615	622	222	16%	272	11%	84%	80%	82%
Kerala	Thrissur	32	22437	177	6%	2336	74	1105	35	70%	78%	313	577	281	20%	113	6%	77%	76%	78%
Kerala	Wayanad	8	6063	181	5%	774	92	274	33	65%	52%	255	173	61	18%	207	29%	87%	84%	85%
Lakshadweep																				
Lakshadweep	Lakshadweep *	1	228	84	3%	15	22	6	9	12%	55%	5	2	2	25%	1	8%	100%	71%	71%

District-wise Performance of RNTCP (Contd.)

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Madhya Pradesh																				
Madhya Pradesh	Balaghat **	16	3696	57	16%	1155	71	433	27	33%	49%	452	85	132	23%	28	3%	87%	86%	87%
Madhya Pradesh	Barwani †	12	6882	141	12%	1043	86	495	41	51%	68%	233	119	183	27%	33	4%	90%	85%	86%
Madhya Pradesh	Betul **	16	5920	94	11%	959	61	402	26	32%	60%	266	115	146	27%	28	4%	89%	79%	81%
Madhya Pradesh	Bhind	16	8273	129	13%	1867	116	675	42	52%	49%	694	142	324	32%	100	7%	90%	81%	85%
Madhya Pradesh	Bhopal	21	18007	217	16%	3776	182	1031	50	62%	44%	1329	379	665	39%	125	5%	81%	83%	83%
Madhya Pradesh	Chhatarpur **	17	9631	145	12%	2030	122	605	36	46%	45%	739	66	404	40%	35	2%	87%	76%	84%
Madhya Pradesh	Chhindwara **	21	7288	87	17%	1488	71	722	35	43%	72%	275	211	262	27%	51	4%	91%	83%	85%
Madhya Pradesh	Damoh **	12	5418	111	19%	1767	145	741	61	76%	57%	560	183	227	23%	16	1%	85%	81%	86%
Madhya Pradesh	Datia	7	3942	139	19%	1150	163	466	66	82%	58%	340	94	202	30%	82	9%	87%	83%	88%
Madhya Pradesh	Dewas	15	6332	108	11%	1553	105	575	39	49%	48%	615	188	117	17%	73	5%	92%	88%	88%
Madhya Pradesh	Dhar †	20	10403	133	11%	2252	115	920	47	59%	53%	815	199	260	22%	63	3%	92%	85%	88%
Madhya Pradesh	Dindori †	7	2082	80	13%	367	56	217	33	42%	84%	41	39	56	21%	4	1%	84%	75%	80%
Madhya Pradesh	Guna	19	6539	87	19%	1834	98	863	46	57%	60%	574	123	227	21%	27	2%	90%	86%	89%
Madhya Pradesh	Gwalior	18	12934	176	19%	2690	146	996	54	68%	64%	552	308	793	44%	129	7%	91%	85%	86%
Madhya Pradesh	Harda **	5	2048	96	11%	421	79	157	29	37%	50%	155	44	60	28%	10	3%	83%	76%	76%
Madhya Pradesh	Hoshangabad **	12	8259	169	13%	2082	170	743	61	76%	49%	760	278	242	25%	113	6%	94%	91%	92%
Madhya Pradesh	Indore	29	17330	149	14%	4242	146	1402	48	60%	63%	837	1044	625	31%	233	7%	91%	85%	85%
Madhya Pradesh	Jabalpur	24	9822	101	23%	3004	123	1338	55	68%	74%	479	478	552	29%	144	6%	76%	69%	73%
Madhya Pradesh	Jhabua †	16	6831	109	15%	1750	111	726	46	58%	57%	546	120	295	29%	18	1%	93%	82%	86%
Madhya Pradesh	Katni	12	4431	92	26%	1813	151	861	72	90%	58%	626	100	225	21%	81	5%	85%	82%	85%
Madhya Pradesh	Khandwa **	19	8163	106	14%	2100	109	876	46	57%	52%	794	189	202	19%	54	3%	92%	88%	89%
Madhya Pradesh	Khargone **	17	6963	101	15%	2088	121	712	41	52%	48%	768	311	245	26%	83	5%	91%	86%	87%
Madhya Pradesh	Mandla †	10	4119	102	20%	1103	109	590	59	73%	71%	239	129	125	17%	30	3%	92%	89%	90%
Madhya Pradesh	Mandsaur	13	6787	127	19%	2275	171	872	65	82%	57%	662	236	431	33%	21	1%	86%	83%	88%
Madhya Pradesh	Morena	18	8298	116	17%	2123	119	693	39	48%	59%	478	174	573	45%	108	8%	89%	81%	82%
Madhya Pradesh	Narsinghpur **	11	3462	80	15%	970	90	382	35	44%	59%	265	99	148	28%	26	3%	84%	72%	73%

District-wise Performance of RNTCP (Contd.)

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Madhya Pradesh	Neemuch	8	6757	207	10%	1398	171	499	61	76%	51%	475	162	184	27%	50	4%	92%	86%	88%
Madhya Pradesh	Panna **	10	2639	69	31%	1248	130	546	57	71%	69%	248	113	243	31%	26	3%	91%	83%	88%
Madhya Pradesh	Raisen **	13	3564	71	14%	1406	111	359	28	36%	36%	638	75	168	32%	22	2%	89%	83%	85%
Madhya Pradesh	Rajgarh	14	5232	93	18%	2020	143	619	44	55%	46%	716	177	273	31%	36	2%	87%	82%	83%
Madhya Pradesh	Ratlam	14	6024	110	19%	1950	142	654	48	60%	51%	627	217	334	34%	29	2%	87%	79%	81%
Madhya Pradesh	Rewa	22	9576	108	16%	3127	141	969	44	54%	50%	977	605	427	31%	243	10%	86%	75%	77%
Madhya Pradesh	Sagar **	23	9673	106	16%	2701	119	1067	47	59%	52%	976	220	402	27%	130	6%	85%	79%	82%
Madhya Pradesh	Satna	21	6380	76	19%	2909	138	947	45	56%	43%	1241	304	200	17%	46	2%	91%	88%	90%
Madhya Pradesh	Sehore **	12	3864	79	12%	1143	94	346	28	36%	40%	518	114	97	22%	41	4%	89%	85%	88%
Madhya Pradesh	Seoni **	13	3064	58	20%	903	69	358	27	34%	64%	204	133	167	32%	27	4%	81%	73%	75%
Madhya Pradesh	Shahdol	18	4523	64	19%	1399	79	634	36	45%	56%	492	96	135	18%	31	3%	89%	83%	87%
Madhya Pradesh	Shajapur	15	6110	105	14%	1400	96	520	36	45%	61%	328	135	301	37%	23	2%	94%	91%	92%
Madhya Pradesh	Sheopur	6	3088	122	27%	944	150	547	87	108%	74%	188	42	149	21%	50	6%	81%	71%	83%
Madhya Pradesh	Shivpuri	16	6270	97	21%	2064	127	1031	64	79%	59%	718	44	191	16%	31	2%	91%	87%	89%
Madhya Pradesh	Sidhi	21	7320	89	14%	1656	80	691	33	42%	58%	494	187	197	22%	56	4%	87%	86%	89%
Madhya Pradesh	Tikamgarh **	14	3194	59	17%	1057	78	422	31	39%	51%	410	89	111	21%	6	1%	84%	79%	79%
Madhya Pradesh	Ujjain	19	8397	109	20%	2290	119	930	48	60%	63%	541	315	447	32%	59	3%	91%	85%	87%
Madhya Pradesh	Umaria	6	1550	67	16%	468	81	178	31	38%	52%	165	31	69	28%	10	3%	87%	77%	78%
Madhya Pradesh	Vidisha **	14	5655	103	16%	2425	177	614	45	56%	36%	1072	170	253	29%	160	9%	89%	83%	89%
Maharashtra																				
Maharashtra	Ahmadnagar	45	19789	111	12%	4539	102	2299	52	64%	67%	1109	587	266	10%	234	6%	90%	83%	87%
Maharashtra	Akola	18	9111	128	13%	1876	106	918	52	65%	72%	354	297	235	20%	48	3%	90%	85%	86%
Maharashtra	Amravati Mun Corp	6	4140	173	13%	777	130	274	46	57%	66%	139	165	113	29%	29	5%	86%	76%	79%
Maharashtra	Amravati Rural	22	13407	149	11%	2637	118	1044	47	58%	64%	598	356	403	28%	69	3%	90%	86%	87%
Maharashtra	Aurangabad Muni Corp	10	6854	180	14%	1005	106	443	47	58%	78%	126	247	138	24%	41	5%	91%	86%	86%

District-wise Performance of RNTCP (Contd.)

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Maharashtra	Aurangabad-MH **	22	8751	98	14%	1995	89	1161	52	65%	70%	509	133	152	12%	46	3%	92%	90%	91%
Maharashtra	Bhandara	12	7837	158	12%	1375	111	596	48	60%	59%	417	105	203	25%	129	12%	91%	85%	86%
Maharashtra	Bid **	24	11110	118	13%	2332	99	1120	48	59%	69%	506	412	205	15%	110	5%	92%	86%	86%
Maharashtra	Buldana **	24	15821	163	15%	2970	122	1310	54	67%	61%	838	259	442	25%	92	4%	90%	85%	87%
Maharashtra	Chandrapur	23	13288	147	12%	2751	121	1271	56	70%	61%	812	300	223	15%	116	5%	93%	88%	89%
Maharashtra	Dhule	19	12214	164	11%	2497	134	1044	56	70%	58%	769	376	184	15%	121	6%	91%	86%	87%
Maharashtra	Gadchiroli **	11	5898	139	13%	1182	112	572	54	68%	64%	325	143	91	14%	29	3%	91%	85%	90%
Maharashtra	Gondiya	13	8616	165	10%	1513	116	669	51	64%	67%	329	262	188	22%	84	7%	87%	84%	84%
Maharashtra	Hingoli **	11	4293	100	15%	1348	125	575	53	67%	61%	374	163	175	23%	31	3%	88%	84%	88%
Maharashtra	Jalgaon	40	20606	128	11%	5254	131	2156	54	67%	51%	2038	512	406	16%	264	6%	93%	87%	87%
Maharashtra	Jalna **	18	10499	149	10%	2013	114	810	46	58%	54%	684	199	253	24%	30	2%	88%	82%	87%
Maharashtra	Kalyan Dombivli MC	13	5602	108	17%	1845	142	735	56	71%	63%	426	388	180	20%	46	3%	92%	87%	88%
Maharashtra	Kolhapur	33	18154	137	9%	2971	90	1166	35	44%	58%	844	486	276	19%	134	5%	83%	74%	78%
Maharashtra	Kolhapur Mun Corp	5	2760	130	10%	690	130	217	41	51%	53%	193	134	95	30%	44	8%	80%	65%	68%
Maharashtra	Latur **	23	10984	121	10%	1912	84	875	39	48%	60%	584	245	158	15%	58	3%	81%	75%	84%
Maharashtra	Mumbai	130	91066	175	18%	28887	222	8660	67	83%	57%	6579	5788	4381	34%	1763	8%	90%	86%	86%
Maharashtra	Nagpur Muni Corp	22	15861	177	15%	3750	168	1292	58	72%	69%	588	1151	414	24%	174	6%	91%	86%	86%
Maharashtra	Nagpur Rural	22	10521	121	12%	2800	128	1396	64	80%	62%	860	189	248	15%	67	3%	94%	90%	91%
Maharashtra	Nanded **	27	11906	112	14%	3135	118	1225	46	58%	56%	980	445	334	21%	130	5%	91%	86%	89%
Maharashtra	Nanded Waghela MC	5	2563	136	18%	668	142	251	53	67%	69%	115	154	104	29%	11	2%	88%	85%	85%
Maharashtra	Nandurbar *	14	7059	124	12%	1609	113	657	46	58%	52%	605	156	133	17%	12	1%	91%	80%	83%
Maharashtra	Nashik	43	23773	139	12%	5680	133	2492	58	73%	57%	1848	848	339	12%	815	16%	93%	91%	92%
Maharashtra	Nashik Corp	12	5053	108	16%	1402	119	687	58	73%	66%	348	211	106	13%	92	7%	92%	88%	89%
Maharashtra	Navi Mumbai	8	9183	299	15%	1756	229	599	78	98%	68%	280	382	277	32%	197	16%	90%	87%	87%

District-wise Performance of RNTCP (Contd.)

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Maharashtra	Osmanabad **	16	6508	101	11%	1376	86	637	40	50%	66%	321	214	143	18%	33	3%	90%	87%	90%
Maharashtra	Parbhani **	16	6612	102	14%	1674	103	693	43	53%	59%	485	235	221	24%	75	5%	90%	86%	86%
Maharashtra	Pimpri Chinchwad	11	8008	182	13%	1960	179	657	60	75%	65%	360	557	219	25%	102	6%	90%	84%	84%
Maharashtra	Pune	28	11534	104	15%	4067	147	1608	58	73%	71%	644	1116	348	18%	115	3%	92%	86%	86%
Maharashtra	Pune Rural	40	29837	186	12%	4517	113	2016	50	63%	67%	1014	619	597	23%	61	2%	90%	83%	85%
Maharashtra	Raigarh-MH	24	12765	133	13%	3422	142	1305	54	68%	57%	1004	455	342	21%	72	3%	90%	87%	87%
Maharashtra	Ratnagiri	19	9984	135	12%	2693	146	877	47	59%	50%	882	259	302	26%	76	4%	91%	86%	86%
Maharashtra	Sangli	23	15228	163	9%	2678	114	1075	46	57%	59%	754	400	183	15%	86	4%	91%	82%	83%
Maharashtra	Sangli Muni Corp	5	2386	125	12%	756	159	208	44	55%	50%	212	190	36	15%	45	7%	90%	81%	81%
Maharashtra	Satara	31	19965	164	8%	4027	132	1158	38	47%	42%	1612	526	330	22%	144	4%	89%	77%	82%
Maharashtra	Sindhudurg	9	7520	200	8%	1223	130	467	50	62%	59%	331	193	131	22%	28	3%	89%	85%	86%
Maharashtra	Solapur	33	17307	133	10%	2698	83	1457	45	56%	70%	631	271	209	13%	78	3%	89%	82%	83%
Maharashtra	Solapur Muni Corp	10	6628	174	13%	1305	137	487	51	64%	59%	334	227	132	21%	95	9%	87%	83%	83%
Maharashtra	Thane	49	24801	126	13%	7233	147	2799	57	71%	57%	2124	1062	710	20%	398	7%	92%	89%	89%
Maharashtra	Thane Muni Corp	14	8781	160	18%	2797	203	785	57	71%	59%	550	685	420	35%	212	10%	90%	85%	85%
Maharashtra	Ulhasnagar Muni Corp	5	3402	165	20%	927	180	316	61	77%	52%	288	90	124	28%	50	7%	89%	73%	73%
Maharashtra	Wardha	13	7698	143	13%	1669	124	706	53	66%	64%	392	348	192	21%	74	5%	90%	85%	88%
Maharashtra	Washim	11	3456	78	12%	1120	101	419	38	47%	55%	347	144	142	25%	70	8%	87%	84%	85%
Maharashtra	Yavatmal **	27	15325	143	12%	3481	130	1387	52	65%	58%	999	550	418	23%	118	4%	92%	86%	87%
Manipur																				
Manipur	Bishnupur	2	979	109	9%	327	146	95	42	57%	51%	91	84	13	12%	8	3%	87%	87%	88%
Manipur	Chandel *	1	947	178	6%	246	185	59	44	59%	38%	95	33	22	27%	8	4%	86%	81%	87%
Manipur	Churachandpur*	2	3513	354	5%	1109	447	122	49	65%	18%	575	148	31	20%	211	25%	93%	86%	86%
Manipur	Imphal East	4	2604	152	11%	914	214	247	58	77%	41%	357	145	51	17%	33	4%	88%	84%	84%

District-wise Performance of RNTCP (Contd.)

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Manipur	Imphal West	5	4243	222	10%	911	191	189	40	53%	36%	342	229	59	24%	22	3%	91%	83%	83%
Manipur	Senapati *	4	1236	75	9%	423	103	109	26	35%	47%	121	97	45	29%	36	11%	91%	87%	87%
Manipur	Tamenglong *	1	403	83	11%	85	70	30	25	33%	58%	22	11	16	35%	7	11%	89%	82%	82%
Manipur	Thoubal	4	1236	78	15%	671	169	147	37	49%	36%	257	126	36	20%	20	4%	87%	92%	92%
Manipur	Ukhrul *	2	843	138	10%	199	130	66	43	57%	67%	33	47	39	37%	9	6%	69%	68%	73%
Meghalaya																				
Meghalaya	East Khasi Hills *	3	4765	443	17%	2293	853	421	157	209%	45%	520	694	307	42%	274	17%	80%	71%	73%
Meghalaya	East Garo Hills *	7	1104	38	11%	221	31	103	14	19%	62%	62	13	25	20%	13	7%	83%	79%	81%
Meghalaya	Jaintia Hills *	3	1082	84	20%	443	138	141	44	59%	57%	105	105	67	32%	80	23%	84%	87%	88%
Meghalaya	Ri Bhoi *	2	1271	152	13%	370	177	133	64	85%	61%	84	64	42	24%	34	12%	79%	66%	66%
Meghalaya	South Garo Hills *	1	469	109	12%	109	101	62	58	77%	70%	27	10	5	7%	9	9%	98%	91%	91%
Meghalaya	West Garo Hills *	6	3734	167	15%	765	137	420	75	100%	76%	135	72	72	15%	36	6%	88%	88%	88%
Meghalaya	West Khasi Hills *	3	1859	146	11%	656	205	167	52	70%	50%	164	191	63	27%	103	20%	91%	90%	91%
Mizoram																				
Mizoram	Aizawl *	4	3513	238	11%	1104	299	233	63	84%	44%	302	393	89	28%	72	8%	94%	92%	93%
Mizoram	Champhai *	1	625	142	8%	152	138	44	40	53%	58%	32	56	8	15%	12	9%	93%	93%	93%
Mizoram	Kolasib *	1	797	301	12%	197	297	76	115	153%	61%	49	56	12	14%	15	8%	95%	91%	91%
Mizoram	Lawngtlai *	1	373	118	9%	122	154	54	68	91%	71%	22	20	15	22%	4	4%	92%	89%	89%
Mizoram	Lunglei *	1	1098	184	20%	277	186	148	99	132%	76%	46	49	30	17%	21	9%	95%	83%	83%
Mizoram	Mamit *	1	392	145	9%	66	97	33	49	65%	66%	17	14	2	6%	3	5%	100%	95%	95%
Mizoram	Saiha *	1	644	244	13%	192	291	76	115	153%	72%	30	50	15	16%	7	4%	99%	100%	100%
Mizoram	Serchhip *	1	510	211	6%	67	111	25	41	55%	63%	15	21	6	19%	5	8%	100%	100%	100%
Nagaland																				
Nagaland	Dimapur *	3	2539	190	14%	951	284	305	91	121%	40%	461	15	117	28%	42	5%	91%	87%	88%

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Nagaland	Kohima *	3	1692	124	16%	441	129	172	50	67%	73%	64	123	47	21%	36	10%	93%	86%	89%
Nagaland	Mokokchung *	2	1209	122	9%	234	95	109	44	59%	72%	43	25	43	28%	12	7%	94%	90%	90%
Nagaland	Mon *	3	1820	161	9%	441	156	170	60	80%	70%	73	107	65	28%	37	11%	86%	95%	95%
Nagaland	Phek *	2	562	87	10%	114	71	53	33	44%	90%	6	45	9	15%	7	7%	92%	79%	79%
Nagaland	Tuensang *	5	1974	110	12%	663	147	245	54	73%	62%	151	153	62	20%	84	15%	93%	85%	85%
Nagaland	Wokha *	2	773	110	12%	129	74	87	50	66%	73%	32	3	7	7%	4	3%	98%	99%	99%
Nagaland	Zunheboto *	2	684	102	10%	106	63	52	31	41%	76%	16	17	17	25%	9	11%	96%	91%	91%
Orissa																				
Orissa	Anugul	12	7253	148	11%	1214	99	592	48	57%	68%	273	165	132	18%	75	7%	93%	90%	91%
Orissa	Balangir **	14	6567	114	15%	2058	143	798	56	65%	49%	818	266	101	11%	65	3%	89%	82%	86%
Orissa	Baleshwar	22	7763	89	13%	1727	79	753	35	41%	60%	504	221	149	17%	74	5%	90%	85%	87%
Orissa	Bargarh	14	6567	113	13%	1902	131	809	56	66%	60%	545	382	90	10%	64	4%	90%	79%	84%
Orissa	Baudh	4	1967	123	11%	414	103	228	57	67%	80%	58	71	37	14%	25	7%	89%	84%	85%
Orissa	Bhadrak	14	4747	83	10%	889	62	379	26	31%	63%	218	194	59	13%	36	5%	88%	85%	88%
Orissa	Bhubaneswar Corp	7	4112	147	13%	714	102	284	41	48%	76%	92	228	77	21%	37	6%	83%	82%	85%
Orissa	Cuttack	25	9188	91	15%	2047	81	722	29	34%	69%	331	669	201	22%	92	5%	78%	67%	79%
Orissa	Debagarh	3	1575	134	10%	262	89	121	41	48%	63%	72	40	18	13%	7	3%	90%	84%	84%
Orissa	Dhenkanal	11	6036	132	12%	1272	111	585	51	60%	66%	303	204	125	18%	60	5%	92%	89%	91%
Orissa	Gajapati †	6	3294	148	20%	1042	187	558	100	118%	70%	242	140	78	12%	63	7%	87%	75%	79%
Orissa	Ganjam	34	19125	142	15%	5376	159	2014	60	70%	58%	1467	950	598	23%	320	7%	84%	78%	81%
Orissa	Jagatsinghapur	11	3738	82	8%	554	49	262	23	27%	78%	73	160	40	13%	13	3%	91%	91%	92%
Orissa	Jajapur	17	5233	75	12%	1454	83	596	34	40%	67%	291	405	116	16%	53	4%	94%	87%	90%
Orissa	Jharsuguda	5	4795	219	10%	939	171	393	72	84%	58%	290	148	64	14%	42	5%	96%	91%	92%
Orissa	Kalahandi **	14	6939	121	18%	2091	146	1016	71	83%	66%	524	315	176	15%	65	4%	73%	66%	82%
Orissa	Kandhamal †	7	4716	169	13%	851	122	452	65	76%	71%	186	121	67	13%	64	8%	85%	73%	85%

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Orissa	Kendrapara	14	5614	100	9%	917	65	446	32	37%	80%	113	212	113	20%	31	4%	94%	90%	92%
Orissa	Kendujhar	17	11282	168	15%	2792	166	1328	79	93%	65%	707	404	207	13%	69	3%	91%	88%	88%
Orissa	Khordha	13	5187	98	9%	1183	90	438	33	39%	57%	334	277	79	15%	57	5%	88%	87%	89%
Orissa	Koraput †	13	5870	116	19%	1443	114	844	67	78%	81%	201	216	144	15%	45	4%	86%	77%	84%
Orissa	Malkangiri *	5	5049	244	17%	1443	279	770	149	175%	66%	391	98	148	16%	62	5%	85%	83%	85%
Orissa	Mayurbhanj †	24	17677	185	16%	5202	218	2477	104	122%	62%	1515	616	284	10%	148	3%	92%	87%	90%
Orissa	Nabarangapur †	11	3585	82	20%	963	88	539	49	58%	67%	261	51	74	12%	25	3%	87%	83%	88%
Orissa	Nayagarh	9	5141	138	16%	1555	167	503	54	64%	52%	473	234	189	27%	126	10%	68%	63%	68%
Orissa	Nuapada †	6	3062	134	18%	1065	187	435	76	90%	49%	457	40	97	18%	48	5%	83%	79%	93%
Orissa	Puri	16	6781	105	8%	1222	76	413	26	30%	65%	220	302	141	25%	92	10%	90%	83%	90%
Orissa	Rayagada †	9	5886	166	17%	1346	152	783	88	104%	72%	308	129	98	11%	78	6%	87%	80%	85%
Orissa	Sambalpur	10	8038	201	11%	1527	153	571	57	67%	59%	391	403	106	16%	60	4%	88%	87%	88%
Orissa	Sonapur	6	2147	92	11%	578	99	261	45	53%	62%	163	101	39	13%	28	5%	91%	83%	87%
Orissa	Sundargarh †	20	13102	166	14%	3243	165	1319	67	79%	57%	1010	509	218	14%	112	4%	93%	81%	88%
Puducherry																				
Puducherry	Puducherry	11	14703	347	10%	1383	131	636	60	80%	76%	201	299	224	26%	37	3%	87%	80%	81%
Punjab																				
Punjab	Amritsar	21	15195	180	19%	4712	223	1732	82	86%	66%	905	1239	639	27%	274	7%	89%	82%	85%
Punjab	Barnala	6	1867	79	10%	328	56	181	31	32%	75%	60	37	34	16%	18	6%	71%		
Punjab	Bathinda	13	8391	164	13%	1837	144	733	57	60%	65%	393	304	330	31%	78	5%	92%	87%	87%
Punjab	Faridkot	6	4343	182	16%	1074	180	366	61	64%	62%	229	199	206	36%	49	6%	85%	86%	87%
Punjab	Fatehgarh Sahib	6	2574	110	11%	673	115	252	43	45%	72%	98	194	108	30%	39	7%	73%	74%	76%
Punjab	Firozpur	19	6822	90	20%	2088	111	826	44	46%	64%	463	255	425	34%	65	4%	84%	74%	74%
Punjab	Gurdaspur	23	10293	113	13%	2420	107	946	42	44%	64%	530	415	412	30%	72	4%	92%	85%	86%
Punjab	Hoshiarpur	16	11266	176	11%	2162	135	876	55	58%	61%	555	274	361	29%	51	3%	91%	85%	86%
Punjab	Jalandhar	21	12297	145	13%	2819	133	1039	49	52%	65%	548	675	441	30%	170	8%	84%	75%	79%
Punjab	Kapurthala	8	3983	122	16%	921	113	474	58	61%	75%	160	119	132	22%	34	5%	94%	90%	90%

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Punjab	Ludhiana	33	19047	145	13%	5028	153	1689	51	54%	53%	1504	1007	548	24%	259	6%	90%	85%	87%
Punjab	Mansa-PU	7	4208	141	15%	976	131	452	61	64%	71%	182	131	164	27%	37	5%	93%	93%	93%
Punjab	Moga	10	4253	111	16%	970	101	488	51	54%	76%	158	121	166	25%	49	6%	90%	84%	84%
Punjab	Mohali	7	2456	86	9%	508	71	178	25	26%	64%	100	117	77	30%	28	7%	88%		
Punjab	Muktsar	8	4582	136	17%	1118	133	505	60	63%	72%	192	136	226	31%	29	3%	88%	85%	88%
Punjab	Nawanshahr	6	5292	208	10%	901	142	440	69	73%	70%	192	133	112	20%	20	3%	93%	90%	91%
Punjab	Patiala	18	16922	241	13%	3202	183	1240	71	74%	72%	488	750	539	30%	210	8%	80%	78%	82%
Punjab	Rupnagar	7	7023	244	11%	1255	174	495	69	72%	68%	228	283	200	29%	66	7%	88%	81%	84%
Punjab	Sangrur	16	11658	185	10%	2279	145	911	58	61%	61%	580	380	301	25%	63	3%	87%	83%	89%
Punjab	Tarn Taran	12	2519	52	12%	604	50	270	22	23%	64%	152	78	86	24%	25	5%	86%		
Rajasthan																				
Rajasthan	Ajmer	25	15663	160	24%	5809	237	1817	74	93%	52%	1679	867	1180	39%	268	6%	89%	85%	87%
Rajasthan	Alwar	34	14314	106	16%	4918	146	1622	48	60%	47%	1841	563	728	31%	145	4%	90%	85%	89%
Rajasthan	Banswara †	17	7298	108	29%	3249	192	1420	84	105%	60%	929	225	661	32%	104	4%	93%	88%	91%
Rajasthan	Baran	12	6983	152	22%	2386	207	1006	87	109%	61%	650	265	409	29%	108	6%	92%	89%	90%
Rajasthan	Barmer	22	10939	124	16%	3430	155	1190	54	67%	45%	1456	160	463	28%	83	3%	91%	88%	89%
Rajasthan	Bharatpur	24	11991	127	15%	3251	138	1113	47	59%	46%	1313	205	532	32%	84	3%	92%	85%	87%
Rajasthan	Bhilwara	23	16326	180	21%	5883	260	2157	95	119%	61%	1393	751	1318	38%	328	8%	91%	89%	89%
Rajasthan	Bikaner	21	12687	149	17%	3005	141	1112	52	65%	61%	704	518	508	31%	175	7%	91%	87%	88%
Rajasthan	Bundi	11	5684	131	17%	2033	188	693	64	80%	51%	670	187	351	34%	77	5%	93%	88%	89%
Rajasthan	Chittaurgarh	20	8630	106	22%	3442	170	1472	73	91%	66%	772	415	707	32%	68	3%	91%	85%	88%
Rajasthan	Churu	19	7363	96	25%	3046	159	1137	59	74%	58%	830	393	594	34%	156	7%	93%	90%	92%
Rajasthan	Dausa	15	8794	148	16%	2520	170	890	60	75%	53%	799	280	447	33%	103	5%	93%	87%	88%
Rajasthan	Dhaulpur	11	7107	161	20%	2194	198	823	74	93%	61%	522	221	543	40%	147	9%	92%	87%	88%
Rajasthan	Dungarpur †	12	5873	118	30%	2655	213	1301	104	131%	66%	656	152	530	29%	59	3%	91%	89%	91%
Rajasthan	Ganganagar	20	10336	128	17%	3124	155	1210	60	75%	56%	950	393	481	28%	136	5%	92%	88%	88%
Rajasthan	Hanumangarh	17	10030	147	22%	2993	175	1192	70	87%	66%	613	386	713	37%	144	7%	92%	87%	88%

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Rajasthan	Jaipur	59	48633	206	16%	11055	187	3239	55	68%	50%	3198	2014	2039	39%	676	8%	91%	86%	86%
Rajasthan	Jaisalmer	6	4187	183	10%	685	120	304	53	66%	70%	132	107	133	30%	20	4%	91%	89%	92%
Rajasthan	Jalore	16	6016	92	21%	2513	154	889	55	68%	47%	1020	92	407	31%	49	2%	88%	84%	86%
Rajasthan	Jhalawar	13	6863	129	20%	2314	174	830	62	78%	51%	786	180	399	32%	68	4%	91%	84%	84%
Rajasthan	Jhunjhunun	22	9155	106	19%	2795	130	1018	47	59%	60%	689	354	586	37%	91	4%	92%	88%	89%
Rajasthan	Jodhpur	32	18897	146	16%	4559	141	1560	48	60%	51%	1526	661	657	30%	192	5%	90%	87%	88%
Rajasthan	Karauli	14	11515	212	16%	2831	209	1023	75	94%	54%	876	166	714	41%	71	3%	94%	89%	92%
Rajasthan	Kota	18	11809	167	19%	3536	200	1286	73	91%	54%	1110	477	528	29%	239	8%	93%	90%	93%
Rajasthan	Nagaur	31	12219	98	19%	4103	131	1589	51	64%	53%	1385	340	672	30%	121	4%	88%	85%	88%
Rajasthan	Pali	20	9538	116	20%	3345	163	1262	62	77%	51%	1224	305	504	29%	87	3%	91%	85%	88%
Rajasthan	Rajsamand	11	4689	106	23%	1875	169	832	75	94%	64%	473	221	332	29%	32	2%	91%	86%	87%
Rajasthan	Sawai Madhopur	13	9975	199	17%	2466	196	1003	80	100%	64%	572	302	521	34%	100	5%	94%	89%	90%
Rajasthan	Sikar	26	12943	126	16%	3600	140	1286	50	62%	55%	1062	382	590	31%	134	5%	92%	89%	89%
Rajasthan	Sirohi	10	5256	137	19%	1732	181	632	66	83%	51%	602	116	308	33%	46	3%	93%	85%	85%
Rajasthan	Tonk	14	9372	172	24%	3570	262	1446	106	133%	60%	981	279	788	35%	75	3%	90%	86%	88%
Rajasthan	Udaipur	30	23556	199	31%	6783	229	2801	95	118%	62%	1682	858	1226	30%	264	5%	92%	88%	91%
Sikkim																				
Sikkim	East	3	5184	487	9%	858	323	269	101	135%	64%	150	259	123	31%	73	11%	87%	84%	84%
Sikkim	North *	0.4	313	176	12%	120	269	34	76	102%	54%	29	30	16	32%	15	16%	88%	88%	88%
Sikkim	South **	1	1397	245	11%	317	222	98	69	91%	64%	54	88	52	35%	37	15%	92%	88%	88%
Sikkim	West **	1	947	177	10%	243	182	92	69	92%	67%	46	59	37	29%	28	14%	98%	89%	89%
Tamil Nadu																				
Tamil Nadu	Chennai	45	56086	314	10%	6621	148	2582	58	77%	66%	1356	1713	747	22%	481	9%	92%	87%	87%
Tamil Nadu	Coimbatore	45	26804	150	10%	4444	99	2066	46	62%	70%	889	822	533	21%	211	6%	88%	80%	80%
Tamil Nadu	Cuddalore	24	28110	291	6%	3841	159	1348	56	74%	53%	1201	641	421	24%	368	12%	92%	85%	86%
Tamil Nadu	Dharmapuri	14	22957	421	4%	1615	119	661	49	65%	64%	369	359	200	23%	103	7%	88%	75%	76%
Tamil Nadu	Dindigul	20	23048	283	11%	3122	153	1127	55	74%	58%	815	848	297	21%	471	17%	88%	80%	82%

District-wise Performance of RNTCP (Contd.)

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Tamil Nadu	Erode	27	27416	251	10%	2788	102	1234	45	60%	65%	672	415	402	25%	94	4%	83%	73%	75%
Tamil Nadu	Kancheepuram	30	16951	139	8%	4724	155	1914	63	84%	65%	1023	1092	603	24%	408	10%	93%	88%	88%
Tamil Nadu	Kanyakumari	18	13064	185	7%	1623	92	548	31	41%	47%	620	261	155	22%	292	20%	87%	87%	87%
Tamil Nadu	Karur	10	7984	202	7%	1293	131	529	53	71%	60%	347	207	170	24%	60	6%	90%	81%	81%
Tamil Nadu	Krishnagiri	16	13101	200	6%	1845	112	642	39	52%	52%	596	391	178	22%	118	7%	90%	86%	86%
Tamil Nadu	Madurai	27	23566	217	10%	4280	158	1477	54	73%	56%	1158	900	505	25%	439	12%	84%	77%	78%
Tamil Nadu	Nagapattinam	16	9109	144	7%	1522	97	573	36	48%	49%	592	185	164	22%	184	14%	88%	82%	83%
Tamil Nadu	Namakkal	16	11393	180	9%	2051	129	952	60	80%	71%	396	474	200	17%	238	13%	91%	84%	84%
Tamil Nadu	Perambalur	13	8499	170	9%	1522	122	606	48	65%	56%	477	271	151	20%	173	13%	91%	81%	81%
Tamil Nadu	Pudukkottai	15	12775	207	6%	1589	103	638	41	55%	57%	478	274	171	21%	162	12%	87%	80%	83%
Tamil Nadu	Ramanatha puram	13	8795	175	7%	1447	115	620	49	66%	61%	401	257	148	19%	198	15%	90%	79%	79%
Tamil Nadu	Salem	32	26889	212	8%	3959	125	1507	48	63%	63%	872	1066	432	22%	353	10%	87%	77%	80%
Tamil Nadu	Sivaganga	12	9833	202	8%	1492	122	576	47	63%	53%	517	194	163	22%	88	7%	90%	84%	84%
Tamil Nadu	Thanjavur	23	30967	331	6%	3038	130	1066	46	61%	53%	958	589	348	25%	499	19%	90%	85%	86%
Tamil Nadu	The Nilgiris	8	3106	96	6%	487	60	177	22	29%	57%	134	144	23	12%	64	14%	86%	83%	83%
Tamil Nadu	Theni	12	13060	281	8%	2293	198	659	57	76%	40%	987	383	171	21%	386	19%	79%	76%	78%
Tamil Nadu	Thiruvallur	29	19321	166	6%	4228	146	1573	54	72%	61%	1017	913	574	27%	235	7%	88%	81%	82%
Tamil Nadu	Thiruvarur	12	8324	168	8%	1366	111	555	45	60%	55%	449	202	117	17%	94	8%	89%	82%	82%
Tamil Nadu	Tiruchirappalli	25	22614	223	8%	3406	135	1227	48	65%	53%	1078	771	296	19%	169	5%	91%	86%	87%
Tamil Nadu	Tirunelveli	30	19506	164	10%	3807	128	1363	46	61%	48%	1503	559	330	19%	302	9%	88%	83%	86%
Tamil Nadu	Tiruvanamalai	23	17146	185	8%	2945	127	1226	53	71%	58%	898	489	302	20%	519	20%	90%	76%	83%
Tamil Nadu	Toothukudi	17	12183	184	12%	2162	130	1031	62	83%	64%	582	315	204	17%	148	8%	87%	82%	82%
Tamil Nadu	Vellore	37	44325	300	7%	5450	148	2164	59	78%	59%	1522	1195	487	18%	252	5%	91%	88%	89%
Tamil Nadu	Viluppuram	31	22665	182	10%	4365	140	1803	58	77%	62%	1088	751	533	23%	411	11%	92%	88%	88%
Tamil Nadu	Virudhunagar	19	14561	196	9%	2788	150	915	49	66%	46%	1080	477	251	22%	381	15%	85%	75%	81%

District-wise Performance of RNTCP (Contd.)

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Tripura																				
Tripura	Dhalai *	3	2171	163	8%	251	75	153	46	61%	74%	55	22	19	11%	2	1%	94%	90%	91%
Tripura	North Tripura	6	2667	104	14%	626	98	349	54	73%	68%	161	53	47	12%	14	2%	85%	82%	86%
Tripura	South Tripura	8	4304	130	6%	465	56	262	32	42%	76%	84	63	45	15%	18	4%	94%	91%	92%
Tripura	West Tripura	17	8529	128	11%	1231	74	696	42	56%	81%	166	229	126	15%	27	2%	89%	86%	91%
Uttar Pradesh																				
Uttar Pradesh	Agra	41	26677	164	17%	7198	177	1942	48	50%	53%	1735	1069	1744	46%	638	13%	87%	81%	84%
Uttar Pradesh	Aligarh	34	26846	199	14%	6248	185	2586	77	81%	56%	2062	861	663	20%	449	8%	93%	87%	88%
Uttar Pradesh	Allahabad	56	35902	161	13%	8030	144	2723	49	51%	49%	2844	699	1265	32%	297	5%	79%	65%	78%
Uttar Pradesh	Ambedkar Nagar	23	5478	60	18%	1596	70	857	37	39%	67%	422	198	99	10%	30	2%	93%	86%	88%
Uttar Pradesh	Auraiya	13	6381	120	18%	1843	138	802	60	63%	62%	482	120	367	31%	44	3%	91%	85%	87%
Uttar Pradesh	Azamgarh	45	12124	68	18%	3660	82	1598	36	38%	57%	1206	298	391	20%	73	2%	92%	87%	87%
Uttar Pradesh	Baghpat	13	6609	126	21%	2095	159	1045	80	84%	73%	383	279	367	26%	77	5%	94%	89%	89%
Uttar Pradesh	Bahraich **	30	19726	163	13%	4970	164	1804	60	63%	47%	2035	494	635	26%	176	4%	90%	88%	89%
Uttar Pradesh	Ballia	31	7510	60	13%	2217	71	726	23	25%	41%	1033	214	156	18%	72	4%	89%	82%	86%
Uttar Pradesh	Balrampur	19	5901	78	17%	1454	76	859	45	48%	69%	378	70	104	11%	41	3%	91%	86%	86%
Uttar Pradesh	Banda **	17	7890	117	20%	1930	114	792	47	49%	70%	337	199	576	42%	86	6%	83%	71%	74%
Uttar Pradesh	Barabanki **	35	16832	122	17%	4891	142	2116	61	65%	58%	1541	576	648	23%	284	7%	90%	84%	86%
Uttar Pradesh	Bareilly	41	31949	197	15%	7166	176	2786	69	72%	58%	2008	732	1158	29%	299	5%	90%	84%	86%
Uttar Pradesh	Basti **	23	9137	98	17%	3516	151	1216	52	55%	45%	1511	568	204	14%	213	6%	91%	86%	87%
Uttar Pradesh	Bijnor **	35	18179	129	13%	3392	96	1726	49	51%	72%	682	439	521	23%	167	6%	89%	84%	85%
Uttar Pradesh	Budaun **	35	25962	187	13%	5410	156	2571	74	78%	61%	1677	163	818	24%	257	6%	92%	84%	90%
Uttar Pradesh	Bulandshahar	33	18815	143	14%	5674	172	2171	66	69%	48%	2367	438	528	20%	272	5%	94%	90%	92%
Uttar Pradesh	Chandauli	19	7559	102	14%	1460	79	683	37	39%	63%	400	99	237	26%	59	5%	85%	86%	87%
Uttar Pradesh	Chitrakoot	9	3438	95	20%	1202	133	454	50	53%	53%	399	49	177	28%	49	5%	85%	63%	71%
Uttar Pradesh	Deoria	31	6863	56	15%	1656	54	621	20	21%	53%	547	162	290	32%	65	5%	88%	77%	80%
Uttar Pradesh	Etah	31	18553	147	16%	4274	136	1838	58	61%	60%	1234	326	772	30%	184	5%	92%	86%	92%

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Uttar Pradesh	Etawah	15	11337	187	17%	2327	154	915	61	64%	71%	368	292	620	40%	74	5%	84%	79%	79%
Uttar Pradesh	Faizabad	19	8698	113	14%	2220	115	893	46	49%	57%	684	325	259	22%	127	7%	91%	88%	89%
Uttar Pradesh	Farrukhabad	18	9096	128	19%	2332	131	1106	62	65%	64%	623	221	374	25%	114	6%	92%	85%	85%
Uttar Pradesh	Fatehpur **	26	11733	113	13%	2936	113	1139	44	46%	50%	1134	279	306	21%	103	4%	89%	77%	89%
Uttar Pradesh	Firozabad	23	11908	129	20%	3948	171	1184	51	54%	62%	714	481	1130	49%	516	22%	85%	68%	68%
Uttar Pradesh	Gautam Budh Nagar	13	8395	156	16%	2943	219	981	73	77%	62%	595	874	380	28%	208	8%	92%	87%	88%
Uttar Pradesh	Ghaziabad	37	28378	191	15%	9466	255	3465	93	98%	55%	2787	1787	1107	24%	761	9%	93%	90%	90%
Uttar Pradesh	Ghazipur	34	9675	70	15%	2342	68	1031	30	32%	57%	778	122	281	21%	66	3%	88%	82%	86%
Uttar Pradesh	Gonda	31	10114	81	20%	3762	121	1575	50	53%	48%	1739	103	337	18%	162	5%	84%	78%	89%
Uttar Pradesh	Gorakhpur	43	9056	53	16%	2390	56	926	22	23%	52%	845	259	266	22%	91	4%	86%	78%	79%
Uttar Pradesh	Hamirpur-UP **	12	6190	132	12%	1816	154	459	39	41%	33%	916	167	166	27%	100	6%	90%	84%	85%
Uttar Pradesh	Hardoi **	38	21320	139	14%	5234	137	2222	58	61%	55%	1801	287	810	27%	171	4%	91%	86%	88%
Uttar Pradesh	Hathras	15	8364	139	15%	1779	118	898	60	63%	69%	397	94	363	29%	95	7%	93%	86%	88%
Uttar Pradesh	Jalaun **	16	9458	144	17%	2593	158	993	60	64%	59%	703	159	512	34%	91	5%	89%	82%	84%
Uttar Pradesh	Jaunpur	44	16444	93	16%	6546	148	1994	45	48%	40%	2968	820	525	21%	215	4%	93%	86%	87%
Uttar Pradesh	Jhansi **	20	9931	126	20%	2573	131	1204	61	64%	71%	494	309	421	26%	104	5%	91%	83%	83%
Uttar Pradesh	Jyotiba Phule Nagar **	17	13143	194	12%	2185	129	1127	67	70%	67%	559	71	392	26%	46	3%	89%	84%	85%
Uttar Pradesh	Kannauj	16	7283	116	14%	1413	90	634	41	43%	66%	323	133	290	31%	66	6%	92%	87%	87%
Uttar Pradesh	Kanpur Dehat**	18	6301	88	18%	1938	108	821	46	48%	62%	506	160	346	30%	86	6%	88%	74%	78%
Uttar Pradesh	Kanpur Nagar	47	23981	128	20%	6455	138	2516	54	57%	64%	1440	920	1198	32%	388	8%	87%	78%	83%
Uttar Pradesh	Kaushambi	15	6373	109	11%	1637	112	622	43	45%	45%	755	60	96	13%	48	3%	93%	78%	87%
Uttar Pradesh	Kheri	36	18366	127	17%	5191	144	2185	61	64%	55%	1818	335	756	26%	206	5%	88%	83%	87%
Uttar Pradesh	Kushinagar	33	9827	75	12%	2188	67	970	30	31%	56%	758	199	191	16%	95	5%	91%	87%	89%
Uttar Pradesh	Lalitpur **	11	7811	177	16%	1722	156	896	81	86%	71%	372	97	290	24%	67	5%	90%	84%	85%
Uttar Pradesh	Lucknow	42	37777	227	16%	7390	178	2866	69	73%	62%	1782	1122	1313	31%	439	8%	85%	84%	84%

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Uttar Pradesh	Maharajganj **	24	6760	69	11%	1590	65	600	25	26%	44%	761	108	112	16%	44	3%	93%	89%	90%
Uttar Pradesh	Mahoba **	8	3387	106	25%	921	115	456	57	60%	85%	81	57	319	41%	43	7%	89%	87%	89%
Uttar Pradesh	Mainpuri	18	8054	112	16%	2217	123	1040	58	61%	57%	777	66	327	24%	84	4%	92%	88%	90%
Uttar Pradesh	Mathura	23	14555	156	13%	3177	136	1387	59	63%	59%	957	323	463	25%	189	7%	90%	88%	90%
Uttar Pradesh	Mau **	21	7259	87	11%	1849	89	527	25	27%	33%	1049	96	112	18%	50	3%	93%	84%	90%
Uttar Pradesh	Meerut	34	25492	188	14%	6265	185	2743	81	85%	60%	1812	927	612	18%	142	3%	93%	90%	90%
Uttar Pradesh	Mirzapur	24	15148	159	13%	2992	125	1502	63	66%	61%	950	167	371	20%	105	4%	89%	89%	93%
Uttar Pradesh	Moradabad **	42	24770	146	14%	5946	141	2665	63	66%	57%	2037	373	815	23%	202	4%	88%	77%	78%
Uttar Pradesh	Muzaffarnagar	40	21781	136	16%	4917	123	2285	57	60%	71%	922	644	943	29%	188	5%	89%	83%	86%
Uttar Pradesh	Pilibhit **	19	17773	240	11%	2823	152	1127	61	64%	59%	775	182	575	34%	152	7%	93%	82%	82%
Uttar Pradesh	Pratapgarh **	31	8783	71	13%	2333	76	875	28	30%	46%	1034	165	221	20%	53	3%	83%	74%	86%
Uttar Pradesh	Rae Bareli **	32	14020	108	19%	4725	146	2173	67	71%	53%	1902	231	386	15%	109	3%	87%	80%	86%
Uttar Pradesh	Rampur	22	15964	184	13%	3475	160	1443	67	70%	60%	957	286	723	33%	138	5%	87%	84%	85%
Uttar Pradesh	Saharanpur	32	26003	202	15%	6009	187	2330	72	76%	69%	1034	940	1311	36%	417	10%	91%	87%	89%
Uttar Pradesh	Sant Kabir Nagar **	16	5646	88	12%	1193	74	535	33	35%	57%	405	115	114	18%	45	4%	90%	79%	81%
Uttar Pradesh	Sant Ravidas Nagar	15	8387	137	15%	2434	160	926	61	64%	51%	899	155	289	24%	107	5%	97%	92%	94%
Uttar Pradesh	Shahjahanpur	29	12428	108	15%	2937	102	1257	44	46%	56%	982	221	384	23%	111	5%	86%	75%	85%
Uttar Pradesh	Shravasti **	10	3232	81	16%	772	78	420	42	44%	65%	227	51	73	15%	28	4%	90%	82%	83%
Uttar Pradesh	Siddharth nagar **	23	7488	81	13%	1723	75	720	31	33%	52%	664	115	220	23%	73	5%	91%	85%	86%
Uttar Pradesh	Sitapur **	41	25429	156	13%	6439	158	2484	61	64%	49%	2563	296	799	24%	188	4%	90%	87%	90%
Uttar Pradesh	Sonbhadra	17	6299	95	18%	1391	84	879	53	56%	78%	246	78	185	17%	69	6%	96%	91%	91%
Uttar Pradesh	Sultanpur	36	14253	99	13%	3547	99	1542	43	45%	51%	1474	269	254	14%	142	4%	91%	84%	88%
Uttar Pradesh	Unnao **	30	15004	123	16%	4639	152	1730	57	60%	50%	1724	393	731	30%	144	4%	90%	83%	84%
Uttar Pradesh	Varanasi	36	21965	155	16%	5584	157	2422	68	72%	59%	1686	725	611	20%	404	8%	91%	86%	88%

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Uttarakhand																				
Uttarakhand	Almora	7	5234	188	11%	779	112	340	49	51%	80%	87	189	143	30%	38	6%	99%	94%	94%
Uttarakhand	Bageshwar	3	1461	133	10%	252	92	112	41	43%	62%	69	23	45	29%	10	5%	91%	80%	80%
Uttarakhand	Chamoli	4	2515	154	15%	675	166	250	61	65%	63%	149	84	119	32%	19	4%	96%	87%	88%
Uttarakhand	Champawat	2	2240	226	9%	316	128	151	61	64%	66%	79	19	63	29%	10	4%	88%	90%	92%
Uttarakhand	Dehradun	14	12967	230	15%	2667	189	845	60	63%	49%	873	584	337	29%	248	11%	94%	89%	89%
Uttarakhand	Garhwal	8	4724	154	13%	1075	140	495	64	68%	63%	295	137	139	22%	30	3%	94%	89%	89%
Uttarakhand	Hardwar	16	9465	148	14%	1644	103	707	44	47%	68%	330	106	398	36%	52	5%	93%	89%	90%
Uttarakhand	Nainital	8	6896	205	17%	1524	181	641	76	80%	73%	237	269	311	33%	72	6%	90%	86%	87%
Uttarakhand	Pithoragarh	5	3138	154	15%	594	116	300	59	62%	74%	103	64	115	28%	18	4%	93%	94%	95%
Uttarakhand	Rudraprayag	3	1592	159	15%	378	151	168	67	70%	62%	101	47	60	26%	11	3%	96%	87%	87%
Uttarakhand	Tehri Garhwal	7	3574	134	14%	1068	160	384	58	61%	55%	313	155	167	30%	38	4%	89%	85%	88%
Uttarakhand	Udhamsingh Nagar	14	9216	169	14%	1930	142	814	60	63%	58%	597	143	282	26%	84	5%	91%	89%	89%
Uttarakhand	Uttarkashi	3	2667	205	12%	504	155	191	59	62%	61%	123	75	97	34%	23	6%	94%	85%	85%
West Bengal																				
West Bengal	Bankura	35	22413	162	12%	4129	120	2095	61	81%	71%	842	662	393	16%	116	3%	92%	88%	89%
West Bengal	Barddhaman	75	44198	148	12%	9519	127	3872	52	69%	56%	3029	1037	873	18%	565	7%	90%	84%	85%
West Bengal	Birbhum	33	20053	154	14%	3870	119	2133	65	87%	72%	821	337	405	16%	74	2%	89%	86%	87%
West Bengal	Dakshin Dinajpur	16	12349	190	14%	2471	152	1406	86	115%	76%	450	274	229	14%	88	4%	89%	86%	86%
West Bengal	Darjeeling**	17	14835	213	15%	3818	220	1375	79	105%	65%	755	868	560	29%	282	9%	89%	82%	83%
West Bengal	Haora	46	31247	169	12%	6405	138	2419	52	70%	63%	1403	1119	938	28%	413	8%	89%	83%	85%
West Bengal	Hugli	55	29395	135	12%	6199	114	2683	49	66%	65%	1447	1058	581	18%	230	4%	88%	86%	87%
West Bengal	Jalpaiguri **	37	29713	202	14%	6581	179	3228	88	117%	79%	873	1200	927	22%	435	8%	89%	87%	87%
West Bengal	Koch Bihar **	27	17073	159	10%	3191	119	1404	52	70%	63%	814	519	279	17%	92	3%	90%	85%	86%
West Bengal	Kolkata	50	38524	194	13%	7400	149	2803	57	75%	75%	925	1971	1186	30%	578	10%	82%	84%	84%

State	District	Population (in lakh) covered by RNTCP[1]	No. of TB suspects examined	Suspects examined per lakh population per quarter	% of S+ve TB cases among suspects	Total patients registered for treatment[3]	Annual total case detection rate	New smear positive patients registered for treatment	Annual new smear positive case detection rate (%)		% new sputum positive out of total new pulmonary cases	No. of new smear negative cases registered for treatment	No. of new EP cases registered for treatment	No. of smear positive re-treatment cases registered for treatment	% of re-treatment cases out of all smear positive cases	No. (%) of paediatric cases out of all new cases		3 month conversion rate of new smear positive patients[4]	Cure rate of new smear positive patients[5]	Treatment success rate of new smear positive patients[5]
West Bengal	Maldah **	36	26047	183	13%	5538	155	2782	78	104%	67%	1394	539	565	17%	383	8%	90%	84%	85%
West Bengal	Medinipur East	48	22294	116	14%	3824	80	2633	55	73%	86%	427	340	327	11%	121	4%	90%	87%	87%
West Bengal	Medinipur West	56	27724	123	14%	6612	117	3024	54	71%	67%	1482	960	698	19%	220	4%	90%	87%	88%
West Bengal	Murshidabad	63	41954	165	12%	7580	119	3867	61	81%	70%	1652	1062	759	16%	379	6%	91%	87%	88%
West Bengal	Nadia	50	34767	174	10%	5743	115	2606	52	70%	65%	1381	802	532	17%	157	3%	90%	88%	88%
West Bengal	North 24 Parganas	97	49495	128	12%	10135	105	4986	52	69%	77%	1475	1784	1187	19%	433	5%	90%	88%	89%
West Bengal	Puruliya	27	19127	174	12%	4496	164	1815	66	88%	53%	1604	340	334	16%	170	5%	90%	86%	88%
West Bengal	South 24 Parganas	75	37200	124	11%	6667	89	3509	47	63%	76%	1078	1024	755	18%	203	4%	92%	90%	90%
West Bengal	Uttar Dinajpur	26	15560	147	12%	3048	115	1493	56	75%	68%	687	384	254	15%	160	6%	91%	86%	86%
Grand Total		**11310**	**6485404**	143	**14%**	**1475587**	**130**	**592635**	**52**	**70%**	**60%**	**398865**	**206744**	**198439**	25%	**73430**	**6%**	**89%**	**84%**	**86%**
Summary of performance of tribal districts		**511**	**271927**	133	**15%**	**74613**	**146**	**31193**	**61**	**81%**	**59%**	**21929**	**9008**	**8151**	21%	**3636**	**6%**	**90%**	**84%**	**87%**
Summary of performance of poor and backward districts		**2564**	**1130063**	110	**15%**	**288643**	**113**	**120807**	**47**	**63%**	**57%**	**92320**	**25893**	**34711**	22%	**11642**	**5%**	**88%**	**82%**	**86%**

Zonal Analysis																				
North Zone		2825	1663020	147	15%	407450	144	156554	55	58%	59%	110435	61046	61347	28%	21933	7%	90%	84%	86%
South Zone		2390	1704377	178	10%	290842	122	119971	50	67%	61%	77422	46424	36305	23%	16779	7%	88%	82%	84%
West Zone		3180	1738965	137	16%	445636	140	173474	55	68%	59%	119220	58717	67696	28%	19218	5%	90%	85%	87%
East zone		2916	1379042	118	14%	331659	114	142636	49	65%	61%	91788	40557	33091	19%	15500	6%	88%	83%	86%

Estimated New Smear Positive cases/lakh population based on ARTI data for North Zone (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttar Pradesh, Uttarakhand) is 95; East Zone (Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, West Bengal) is 75; South Zone (Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu) is 75 and West Zone (Chhattisgarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan) is 80; Orissa is 85

1 Projected population based on census population of 2001 is used for calculation of case-detection rate. 1 lakh = 100,000 population
2 Smear positive patients diagnosed include new smear positive cases and smear positive re-treatment cases
3 Total patients registered for treatment includes new sputum smear positive cases, new smear negative cases, new extra-pulmonary cases, smear positive re-treatment cases and 'Others'
4 Smear conversion rate not expected for states that began implementing RNTCP during 4th quarter 2007
5 Cure rate and success rate are not expected for states that began implementing RNTCP after First quarter 2007

Referral of TB Suspects from ICTCs to RNTCP Diagnostic Units (2007), (Reported by Phase-I States implementing Joint TB-HIV Action Plan)

	Andhra Pradesh		Karnataka		Maharashtra*		Manipur*		Nagaland*		Tamil Nadu		Total	
Total Population (in lakhs)	813		568		1055		26		22		658		3142	
Total no. of districts/RNTCP reporting units	24		28		48		9		8		30		147	
	HIV Positive	HIV Negative	HIV Positive	HIV Negative	HIV Positive	HIV Negative	HIV Positive	HIV Negative	HIV Positive	HIV Negative	HIV Positive	HIV Negative	HIV Positive	HIV Negative
1. Number of TB suspects referred from ICTCs to RNTCP facilities*	17083	26020	5945	7060	8922	19114	696	472	193	1684	13209	23708	46048	78058
2. Out of the above persons, number diagnosed as having TB:														
a) Sputum Positive TB	2106	4774	646	1009	1069	2972	28	40	27	295	831	2295	4707	11385
b) Sputum Negative TB	948	1645	337	394	428	820	17	33	29	468	531	365	2290	3725
c) Extra-Pulmonary TB	93	123	123	78	154	185	8	7	3	68	218	100	599	561
d) Total diagnosed TB patients	3147	6542	1106	1481	1651	3977	53	80	59	831	1580	2760	7596	15671
3. Out of above total diagnosed TB patients (d), number receiving DOTS	2697	5702	720	1009	1368	3369	50	73	26	383	1236	2259	6097	12795

(Source: ICTC-RNTCP cross referrals submitted monthly by respective State AIDS Control Society to National AIDS Control Organisation and Central TB Division)
* Reporting is incomplete for the last 1-2 months from Maharashtra (Mumbai), Manipur and Nagaland

I am stopping TB

DOTS-
sure cure for TB.

NATIONAL RURAL HEALTH MISSION
राष्ट्रीय ग्रामीण स्वास्थ्य मिशन