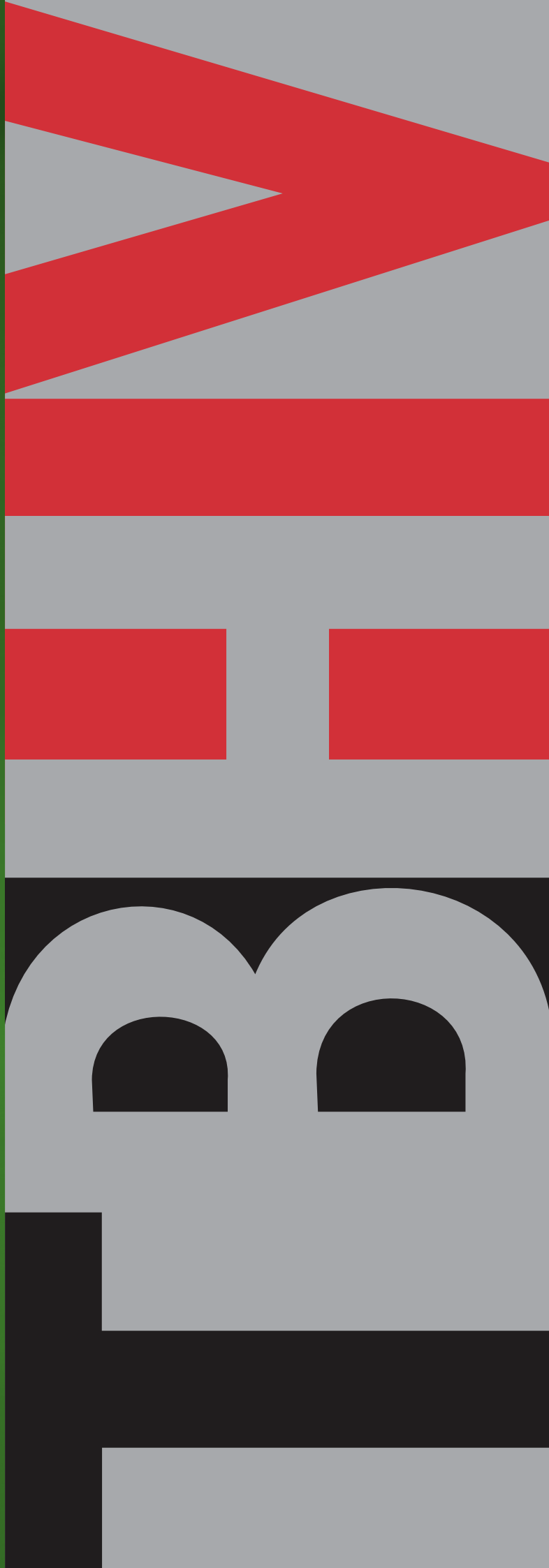
Scaling up of collaborative TB/HIV activities in concentrated HIV epidemic settings

A case study from India



World Health Organization

WHO Library Cataloguing-in-Publication Data

Scaling up of collaborative TB/HIV activities in concentrated HIV epidemic settings: a case study from India.

1.HIV Infections. 2.AIDS-Related Opportunistic Infections - prevention and control. 4.Tuberculosis, Pulmonary - prevention and control. 5.National Health Programs. 6.India. I.World Health Organization.

ISBN 978 92 4 150849 0 (NLM classification: WC 503.5)

Designed by North Creative, Geneva, Switzerland

WHO/HTM/TB/2015.05

WHO/HIV/2015.3

Scaling up of collaborative TB/HIV activities in concentrated HIV epidemic settings

A case study from India

World Health Organization

Contents

Tables

Figures

Acknowledgements

This case study was written by Avinash Kanchar (WHO) with inputs from the following individuals from the Ministry of Health and Family Welfare, Government of India:

Dr Ashok Kumar, Deputy Director General, Department of AIDS Control

Dr R S Gupta, Deputy Director General, Central TB Division

Dr K Sachdeva, Additional Deputy Director General, Central TB Division

Dr Achuthan Sreenivas Nair, National Professional Officer (TB), World Health Organization, India

Dr Rajesh Deshmukh, Programme Officer TB/HIV, Department of AIDS Control

Dr Amar Shah, National Consultant, TB/HIV, Central TB Division

Further inputs were provided by the following individuals from WHO Global TB Programme and HIV/AIDS department:

Haileyesus Getahun

Nguyen Nhat Linh

Alberto Matteelli

Eyerusalem Kebede Negussie

Abbreviations

ANC	antenatal clinics
ANM	auxiliary nurse midwife
ART	anti-retroviral therapy
ATT	anti-tuberculosis treatment
CFR	case fatality rate
CPT	co-trimoxazole preventive therapy
DCC	district TB/HIV coordination committee
DMC	designated microscopy centres
DOT	directly observed therapy
F-ICTC	facility integrated counselling and testing centres
FSW	female sex worker
HIV	human immunodeficiency virus
HRG	high risk group
HTC	HIV testing and counselling
ICF	intensified case finding
ICTC	integrated counselling and testing centres
IDU	injecting drug user
IPT	isoniazid preventive therapy
LAC	link ART centre
NACP	national AIDS control programme
NTCC	national TB coordination committee
NTWG	national technical working group for collaborative TB/HIV activities
PITC	provider-initiated HIV testing and counselling
PLHIV	people living with HIV
PPTCT	Prevention of parent to child transmission
RNTCP	revised national TB control programme
SCC	state TB/HIV coordination committee
SWG	state TB/HIV working group
TB	tuberculosis
VCT	voluntary counselling and testing
WBFPT	whole blood finger prick test

Executive Summary

India has a high burden of both tuberculosis (TB) and HIV, and faces a high burden of HIV-associated TB. While TB is endemic, the HIV epidemic is concentrated in a few states. A national response to TB epidemic was initially integrated in the general health system through the revised national TB control programme. This differed from the staggered response to the HIV epidemic under the national AIDS control programme, where programmes were initiated in high HIV burden states and gradually expanded to the rest of the country. Over the past decade, the HIV epidemic in India has expanded to historically low prevalence settings. However, this increase was not met by increased local programme capacities, and this situation created hurdles for rapid scale-up of collaborative TB/HIV activities and gaps in the detection and treatment of HIV and HIV-associated TB. Facilitated by the joint national TB/HIV policy, national TB and HIV programmes have systematically addressed these gaps and succeeded in reducing the incidence, prevalence and mortality due to TB, HIV and HIV-associated TB.

India's revised national TB control programme and national AIDS control programme address the dual burden of TB and HIV through systematic implementation of collaborative TB/HIV activities across the country. This involved the establishment of a mechanism for regular dialogue between the two national programmes at all administrative levels, adoption of policies and strategies aimed at optimizing use of existing resources and the integration of service delivery into the general health system to improve coverage as well as quality of services.

This case study documents the experience of the scale-up of collaborative TB/HIV activities in India over the past decade, exploring the challenges encountered and the steps taken by national TB and HIV programmes collectively to address them. The key lesson learned from this experience is that collaborative TB/HIV activities can be scaled up successfully in concentrated HIV epidemic settings if TB and HIV programmes share ownership of TB/HIV interventions. In addition, political and administrative commitment is critical to ensure ongoing dialogue, development of joint policies, technical decision-making and day-to-day programme management. Collaborative efforts including strong management information systems, joint supervision and monitoring, joint capacity building, smart use of technology produces efficiency, and optimal utilization of resources. Collaboration also offers opportunities to build on the inherent strengths of individual programmes and scale-up interventions despite challenges like weak infrastructure or shortage of human resources. It is hoped that this documentation will prove beneficial to programme planners and managers in countries implementing collaborative TB/HIV activities, particularly in concentrated HIV epidemic settings.

1. Background

India has the world's highest burden of tuberculosis (TB) and third largest number of people living with HIV in the world; it also ranks third in the world for HIV-associated TB. While TB is endemic across India, the HIV epidemic is concentrated in six out of 35 states and union territories in the country: Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Manipur and Nagaland. These states have an HIV prevalence of around 1% among pregnant women attending the antenatal clinics. The burden of HIV-associated TB closely follows the distribution of HIV epidemic in the country, and more than 75% patients with HIV-associated TB are located in just the six states mentioned above.

India's national AIDS control programme (NACP) and the revised national TB control programme (RNTCP), were established in 1992 and 1993, respectively. Both programmes have been instrumental in impacting the burdens of HIV and TB in India. To address the burden of HIV-associated TB, collaborative TB/HIV activities have been implemented by NACP and RNTCP since 2001. These activities were launched initially in the six high HIV burden states and gradually expanded across the country. Adoption of the joint *national TB/HIV policy framework* in 2007 provided impetus for nation-wide scale-up of collaborative TB/HIV activities which was achieved in 2012. The *national TB/HIV policy framework* which governed implementation of collaborative activities in India was drawn from the WHO interim policy on collaborative TB/HIV activities.[1] It provided a clear outline including the objectives of collaborative TB/HIV activities; monitoring and evaluation mechanisms; roles and responsibilities of staff; drugs and logistics management; and finance management. It steered the scale-up and implementation of collaborative activities across the country by facilitating establishment of coordination mechanisms between the two programmes at all administrative levels. It is a rolling document and underwent revisions in 2009 and 2013 adopting new policies and interventions based on evidence generated by the national programmes through operational research. The 2013 version of national TB/HIV framework also adapts to the national strategic plans (2012-17) for TB and HIV programmes developed by the Indian Ministry of Health and the WHO policy on collaborative TB/HIV activities.[2]

Milestones

The implementation of collaborative TB/HIV activities in India involved extensive consultations and consensus building between the two national programmes. As mentioned above all the key interventions were gradually scaled-up starting from high HIV burden to the low burden states in the country. Table.1 depicts key milestones in this nationwide scale-up.

Table 1: Milestones in scaling-up of collaborative TB/HIV activities in India

Year	Activity
2001	Basic TB/HIV activities initiated in six high HIV burden states
2003	Pilot study for systematic TB/HIV cross-referral and implementation in six HIV high prevalence states
2004	Expansion of cross-referral activities to eight additional states
2005	Standard TB/HIV training modules developed and joint surveillance started
2007	Pilot study for feasibility of routine offer of HIV testing in TB patients and decentralized provision of CPT Development of *national framework for collaborative TB/HIV activities*
2008	Revision of *national framework for collaborative TB/HIV activities*
2009	1. Nationwide implementation of basic TB/HIV activities 2. Implementation of intensified package# of TB/HIV services in nine states including six high HIV prevalence 3. Revision of national framework 4. Scale-up of intensified TB/HIV package in eight additional states 5. Decision to implement intensified TB case finding at all ART centres and HIV testing centres across the country uniformly with standard reporting

2010	Scale-up of intensified TB/HIV package in 11 additional states
2012	Achievement of nationwide coverage of intensified package
2013	1. Adoption of IPT as a strategy for prevention of TB among persons living with HIV 2. Decision to ensure co-location of HIV testing services at all TB microscopy centres 3. Adoption of provider initiated HIV testing and counselling strategy among presumptive TB cases in high HIV burden settings 4. Revision of *national policy framework for collaborative TB/HIV activities*

 # details in section 2.1

Along with scale-up of services, the national programmes also considered expansion and strengthening of service delivery infrastructure, particularly HIV testing and ART services. This case study documents India's experience of the scale-up of collaborative TB/HIV activities, with a special emphasis on ART services for HIV-positive TB patients. It documents the challenges encountered and measures adopted to address them. This experience may provide key strategy inputs for policy development in other countries particularly the concentrated HIV epidemic settings.

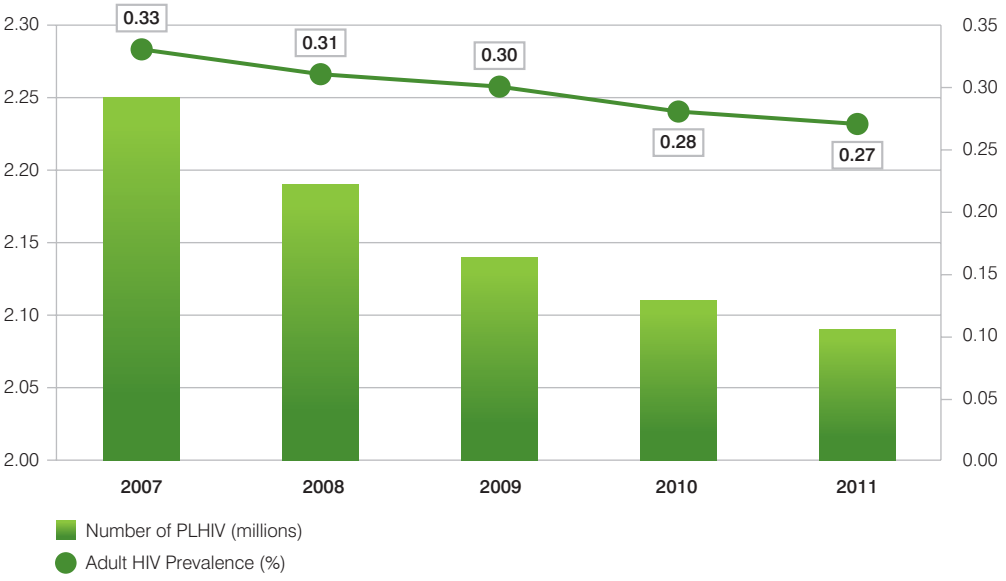
1.1 Epidemiology of HIV

The HIV epidemic in India is highly heterogeneous and concentrated among high risk groups, although vulnerabilities that drive the epidemic differ in different parts of the country. The HIV epidemic shows a declining trend over the past decade, likely due to prevention and treatment strategies implemented by the NACP.

Prevalence

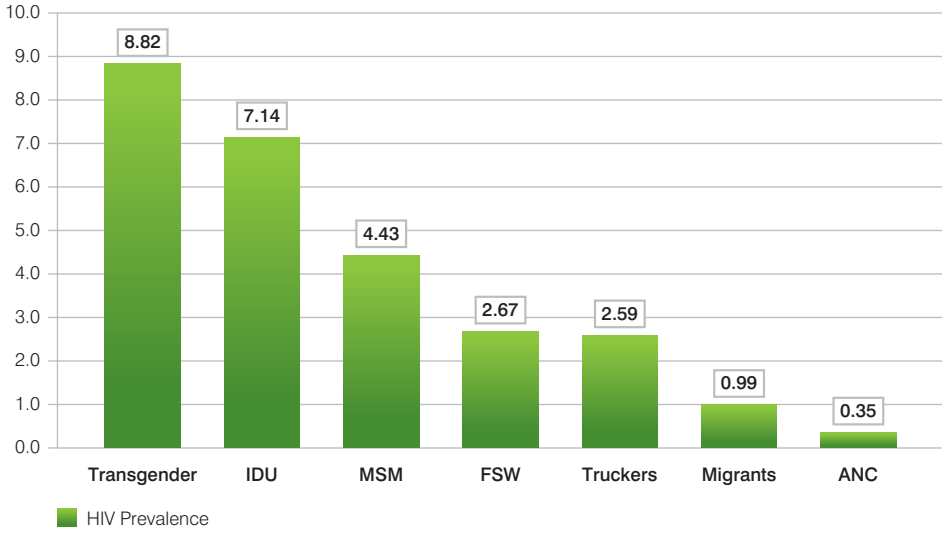
The adult HIV prevalence in India in 2011 was 0.27% with 2.09 million people living with HIV (PLHIV) (Figure 1). Children under 15 years of age accounted for about 7% and those between 15-49 years 86% of PLHIV. Women account for 39% (0.82 million) of infections. The overall prevalence shows a steady decline from an estimated 0.41% in 2001 and 0.33% in 2007. This decline is noted both among men and women, and in all six high HIV prevalence states. The four largest states of the six (Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu) currently carry 53% of total burden, but some of the low HIV prevalence states now show rising trends and these increasingly drive the HIV epidemic in India.

Figure 1: Trend of HIV epidemic in India, 2007-2011[3]



As mentioned above, the HIV epidemic in India is concentrated among high risk groups (HRG). Figure 2 shows HIV prevalence among different HRGs which drive the epidemic in various parts of the country, although the prevalence shows considerable decline over past few years largely due to the array of targeted interventions implemented by NACP focussing on behavioural change.

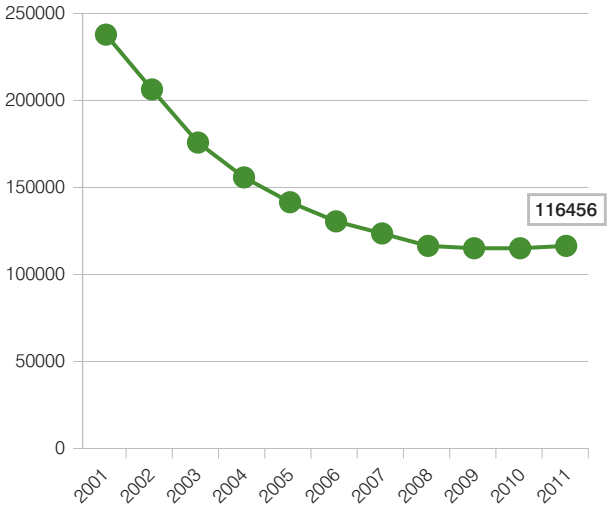
Figure 2: National HIV prevalence among HRGs and antenatal clients 2010-11[4]

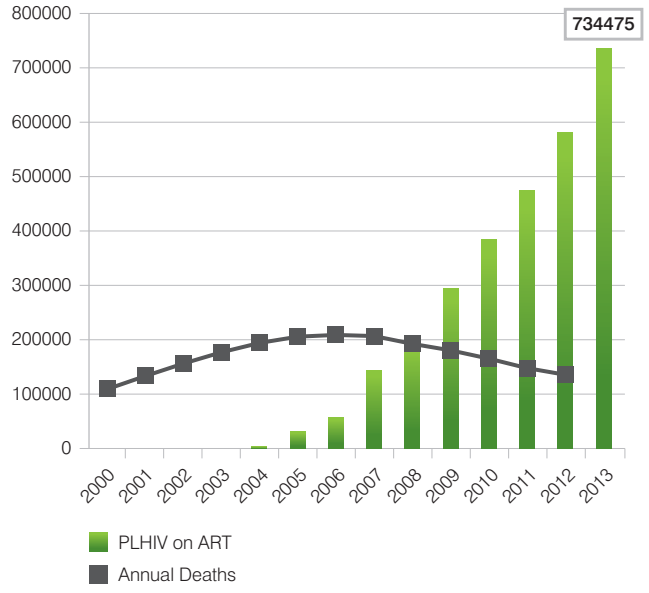


Incidence and mortality: In 2011, approximately 120,000 new HIV infections occurred among adults and 14,500 among children. About 135,000 people died due to HIV/AIDS in 2012. New infections declined by 57% among adults from an estimated 270,000 cases in the year 2000. The bulk of the decline (76%) took place in high HIV prevalence states. This is important evidence of the impact of NACP interventions, including scale-up of HIV prevention interventions. The decline also coincides with massive scale-up of ART services between 2007 and 2011 (Figure 3). In 2013 a total of 734,475 PLHIV were on ART in the country and numbers are increasing due to expansion of ART services and criteria for ART initiation. This also resulted in reduction of AIDS-related deaths. Though the overall number of deaths decreased by about 29%, in six high prevalence states the decline was 42%. An estimated 150,000 lives were saved between 2004 and 2011 due to the scale-up of ART services and at current pace it is estimated that between 50,000 and 60,000 deaths will be averted annually over next five years.

Figure 3: Evidence of programme impact: declining trends of new HIV infections & AIDS-related deaths, India

Estimated new adult HIV infections in India





Changing nature of the HIV epidemic:

In 2011 the six high HIV prevalence states in India accounted for only 31% of the new infections, while the 10 states previously known to have low prevalence (Odisha, Jharkhand, Bihar, Uttar Pradesh, West Bengal, Gujarat, Chhattisgarh, Rajasthan, Punjab and Uttarakhand) together accounted for 57% of cases. This suggests an evolution of the HIV epidemic in India, and the NACP is readjusting its strategies accordingly to address changing needs. Strategies increasingly focus on emerging vulnerabilities and establishing necessary infrastructure for basic HIV prevention and care services in these states.

Analysis of drivers of the epidemic in historically low prevalence states suggests a possible role of migration from rural pockets in these areas to high prevalence destinations in other states.[5] Migrants may acquire HIV infection at these destination sites, and transmit the disease to their spouses on return. This scenario is corroborated by the fact that HIV prevalence among the antenatal care clients (ANCs), particularly in rural areas, is high, while prevalence among high risk groups like female sex workers (FSWs) in these areas remains low. The prevalence is still higher among women whose spouse is a migrant. Evidence from the behavioural studies among migrant populations also corroborates these findings. In some of the states and towns in north and west India (such as Punjab, Chandigarh, Delhi, Mumbai, Kerala, Odisha, Madhya Pradesh, Uttar Pradesh and Bihar) there is an increase in the number of injecting drug users (IDUs) and this group shows increasing HIV prevalence over the last few years. The NACP is adjusting and expanding its targeted interventions for special needs in these states.

1.2 Epidemiology of TB

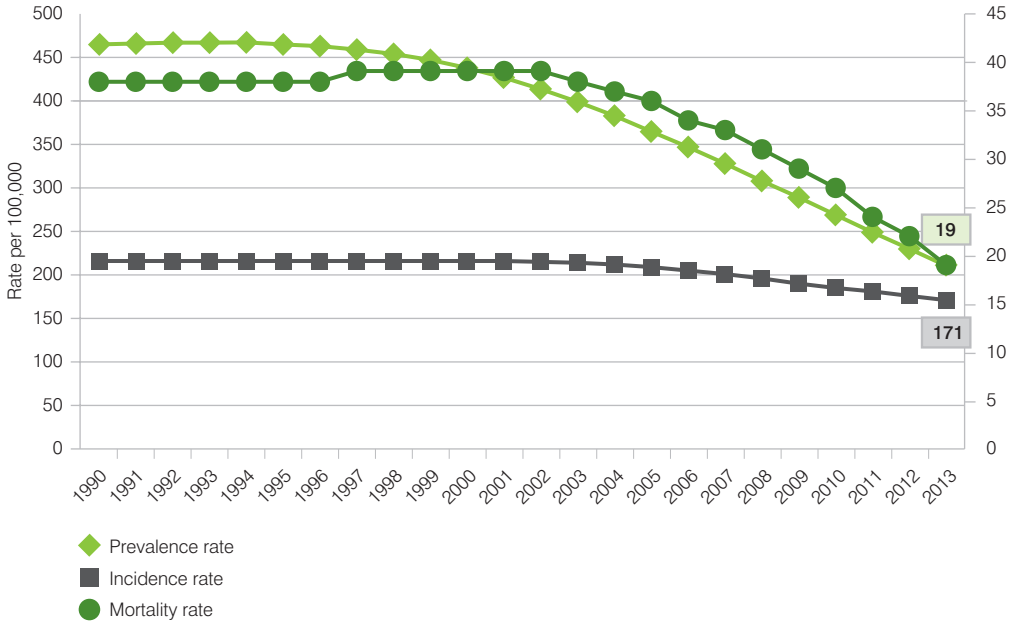
India is the second-most populous country in the world and carries the highest TB burden. In 2013, out of the estimated nine million new cases globally, 2.1 million (26%) occurred in India with a provisional incidence rate of about 171 cases per 100,000 population. TB predominantly affects economically productive age groups, causing significant socio-economic burden within the country. Table 2 shows the overall TB burden in India in 2013.

Table 2: WHO estimated burden of tuberculosis in India, 2013[6]

	Number (Millions) (95% CI)	Rate Per 100,000 Persons (95% CI)
Incidence	2.1 (2.0–2.3)	171 (162–184)
Prevalence	2.6 (1.8–3.7)	211 (143–294)
Mortality	0.24 (0.15–0.35)	19 (12–28)
Estimated	**Number (Millions) (95% CI)**	**Percentage (95% CI)**
HIV among incident TB patients	0.12 (0.10–0.14)	5.7% (4.8–6.6%)
MDR-TB among notified pulmonary TB patients	0.062 (0.050–0.074)	6.1% (4.7–7.3%)

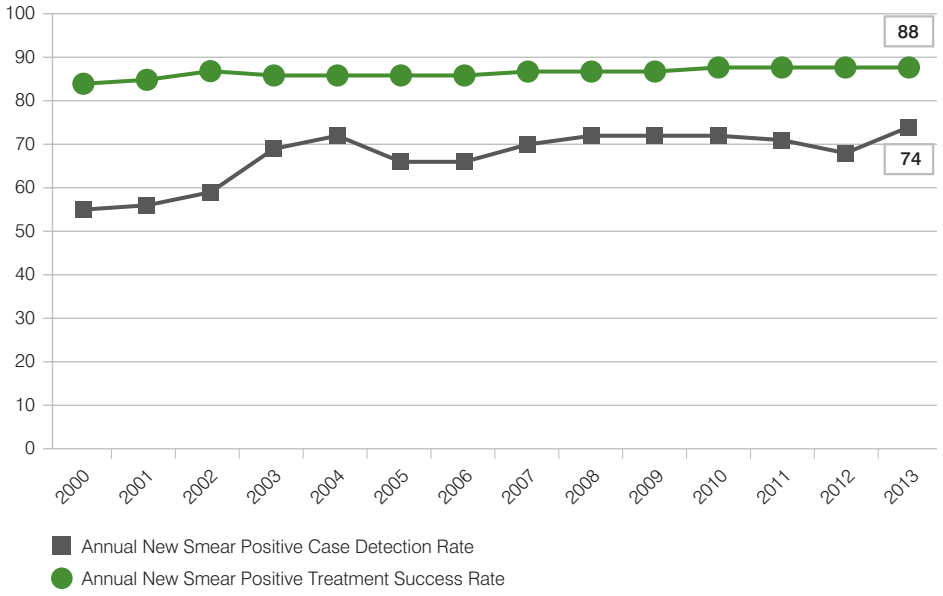
Figure 4 shows trend of TB incidence, prevalence and mortality in India over past two decades. While prevalence and mortality declined by about 50% against 1990 levels, incidence also shows a strong declining trend. TB control efforts under RNTCP appear to be yielding the results and moving the country towards achievement of United Nations Millennium Development Goals (MDGs). RNTCP has consistently achieved cure rate more than 85% and detected close to 70% of the estimated incident cases over the past several years (Figure 5). Since the inception of RNTCP in 1999, about 50 million presumptive TB cases have been assessed for TB and about 15 million TB patients have been diagnosed and treated, leading to about three million lives saved.

Figure 4: Trend of TB incidence, prevalence and mortality rates in India[6]



India also carries a large burden of drug-resistant TB, with an estimated 2.2% of newly detected cases and 15% previously treated TB cases having multidrug-resistant TB (MDR-TB). There were an estimated 62000 MDR-TB cases among the notified cases in 2013.

Figure 5: Annual new smear positive case detection rate and the treatment success rate under Revised National TB Control Programme, India, 2000-2013



1.3 Burden of HIV-associated TB

India bears the third highest burden of HIV-associated TB in the world. An estimated 120,000 HIV-positive TB cases occurred in India in 2013.[7] The distribution of HIV-associated TB closely follows the spread of HIV epidemic. Table 3 shows notification trends for HIV-associated TB in India over the last few years. In 2013, 44,604 patients with HIV associated TB were detected through HIV testing of TB patients and intensified case finding at HIV care and treatment centres. However, this represents only about 35% of the estimated burden in India. Currently, the six high HIV prevalence states contribute about 75% of the detection. Thus a gap exists in detection of HIV-associated TB across the country, but particularly more in historically low HIV prevalence states.

The collaborative TB/HIV activities were implemented in India in a phased manner starting with six high HIV prevalence states, where HIV care infrastructure was established. These six initial states therefore had a major contribution in detection of HIV-associated TB initially. Gradually, as the HIV care infrastructure was scaled-up to other states, both the detection and relative contribution from low prevalence states increased.

Table 3: Contribution of six high HIV prevalence states in detection of HIV associated TB in India

Year	Total No. of HIV positive TB patients detected in India	Total No. of HIV positive TB patients detected in six high HIV prevalence states	Proportion of HIV positive TB cases detected in six high prevalence states
2009	32637	29884	92%
2010	42505	36517	86%
2011	44686	36422	82%
2012	43990	33566	76%
2013	44604	33536	75%

1.4 Case fatality rate (CFR) among HIV-positive TB patients

The case fatality rate (CFR) among the notified HIV positive TB patients in India is about 13%, which is four times higher than that among HIV-negative TB patients (Table 4). Key determinants of mortality among HIV-positive TB patients are delayed detection of HIV or TB; delayed enrolment into HIV care; and delays in starting ART. However, the past four years have witnessed a steady decline in CFR, likely due to improved coordination between the two national programmes, improved referral and linkages, and scale-up of testing and ART services, etc.

Table 4: Trend of case fatality rate among TB/HIV cases in India

Year	Total New TB/HIV cases	Number (%) Successfully treated	Number (%) Died	Case fatality rate
2008	2160	1559 (72%)	362	17%
2009	12674	9358 (74%)	2186	17%
2010	14340	10706 (75%)	2223	16%
2011	24786	19603 (79%)	3207	13%
2012	30681	24237 (79%)	3988	13%

2. TB/HIV collaborative activities in India

2.1 Background:

Implementation of TB/HIV collaborative activities in India started in 2001 with six high HIV prevalence states. Early collaborative activities included joint training of TB and HIV programme staff and cross-referral of patients. The cross-referral included intensified case-finding (ICF) at HIV testing and counselling (HTC) centres and referral to RNTCP designated microscopy centres (DMCs), as well as referral of TB patients at high risk of HIV for HTC. These activities were expanded to eight additional states in 2004, and then nationwide by 2008. Additional TB/HIV activities were incorporated based on evidence generated through operational research commissioned by the NACP and RNTCP. One study demonstrated feasibility of decentralized distribution of co-trimoxazole preventive therapy (CPT) to all HIV positive TB patients using RNTCP service delivery infrastructure. Another study demonstrated feasibility of provider-initiated HIV testing and counselling (PITC) for all TB patients in high HIV prevalence states.[8, 9]

During this period two models of TB/HIV intervention were implemented in India. While a set of essential TB/HIV activities was implemented in all states, an intensified TB/HIV package was implemented additionally in high HIV-burden states. The national policy framework for joint TB/HIV collaborative activities, developed in November 2007, endorsed this differential implementation strategy.

Table 5: Differential models of TB/HIV intervention implemented in India during initial years

Essential TB/HIV interventions (all states)	Intensified TB/HIV package (high HIV prevalence states)
1. Establishment of a co-ordination mechanism and technical working group at national, state (sub-national) and district levels 2. Joint training on TB/HIV for NACP and RNTCP staff 3. Intensified case findings at all HIV testing and ART centres 4. Risk-based offer of HIV testing to TB patients, i.e. only patients with high risk of HIV infection offered the test 5. Referral of HIV-positive TB patients to HIV care, support and treatment centres	1. Routine offers of HIV testing and counselling to all TB patients (PITC) 2. Decentralized provision of CPT to HIV-positive TB patients 3. Referral of HIV-positive TB patients to ART centres and provision of ART based upon eligibility 4. Expanded recording and reporting system including documentation of HIV status on TB treatment cards and registers

The decision to implement the intensified package was taken based on the following considerations: HIV prevalence in the state, absolute HIV burden, availability of HIV testing and treatment facilities and the programme management capacity. In 2008 it was implemented in nine states including the six high HIV-prevalence states (Andhra Pradesh, Goa, Karnataka, Maharashtra, Manipur, Mizoram, Nagaland, Puducherry and Tamil Nadu). Implementation required changes in TB recording and reporting formats to document HIV status, CPT and ART; the training of programme managers and key programme staff; supply of drugs and logistics including treatment cards and registers; and strengthening of supportive supervision. Implementation of intensified packages yielded spectacular results, including high coverage of HIV testing and CPT provision. It also demonstrated the feasibility of implementation in programmatic settings. Therefore, during the revision of the national framework in 2009, the NACP and RNTCP decided to implement the intensified package uniformly across the country. The revised national framework also included the steps required to strengthen monitoring and evaluation of the implementation with specific national indicators and performance targets. Nationwide coverage of the intensified TB/HIV package was achieved in July 2012.

2.2 Mechanisms for implementation of collaborative TB/HIV activities

The Ministry of Health has been committed to implementation of collaborative TB/HIV activities since its inception. Both NACP and RNTCP accorded highest priority to implementation of TB/HIV activities, acknowledging the

importance of a joint response to achieve highest impact. The two programmes designed and implemented following key mechanisms for scale-up of collaborative TB/HIV activities across the country:

1) Development of the joint national TB/HIV policy (national framework for collaborative TB/HIV activities);

2) Establishment of mechanisms for co-ordination between NACP and RNTCP at national, subnational and district level. These mechanisms are designed to provide a platform for development of national and state specific policies, exchange of data, identification of issues and barriers and decisions for programme implementation, and include:

a) Coordination committees chaired by the administrative head at all levels

- National TB/HIV coordination committee (NTCC), chaired by the Secretary of the Department of AIDS Control;
- State TB/HIV co-ordination committee (SCC), chaired by the Secretary of Health in state governments; and
- District TB/HIV coordination committee (DCC), chaired by the district magistrate/collector.

b) Technical working group led by programme managers at all levels

- National technical working group (NTWG) for collaborative TB/HIV activities;
- State TB/HIV working group (SWG) ; and
- District TB/HIV team consisting of NACP and RNTCP programme managers and key staff.

c) Systematic monitoring of collaborative TB/HIV activities:

- RNTCP is responsible for systematic recording and reporting of PITC among TB patients, while NACP is responsible for implementation and reporting of intensified TB case finding at HIV testing and ART centres;
- NACP and RNTCP share monthly and quarterly reports during TB/HIV meetings at district level, and review the performance during quarterly technical working group meetings and programme review meetings at the state and national level;
- The conduct of coordination committee and technical working group meetings is routinely reported as a variable in quarterly reports submitted by district programme managers to the state and national level; and
- Proceedings of these meetings are systematically documented and shared with the next higher level of authority, with observations discussed during review meetings.

d) Joint supervision and monitoring

- A joint annual review of performance with programme managers and staff takes place at national and state level;
- TB/HIV is a standard agenda item for all national, state and district level review meetings of NACP and RNTCP, with participation of the respective programme counterparts at each level;
- Joint field visits by NACP and RNTCP programme managers are arranged from the national to state level and from state to district level;
- Joint field visits are organized by NACP and RNTCP supervisors from district level to the service delivery points; and
- Monthly review meetings of key programme staff are held at the district level.

e) Additional manpower to strengthen supervision and monitoring

- A full-time nodal officer for TB/HIV appointed at national level in both the NACP and RNTCP to co-ordinate implementation of TB/HIV activities at national and sub-national level;
- Full-time nodal officers for TB/HIV activities at state level provided in all the 28 states by RNTCP and in six high HIV prevalence states by NACP; and
- One full-time TB/HIV supervisor provided at district level in each of the 671 districts in the country by RNTCP.

These systematic measures enable regular interactions between programme managers and staff and facilitate implementation of programme activities uniformly across the country. They also facilitate problem-solving at the local level and development of innovations to overcome barriers.

3. HIV and TB service delivery

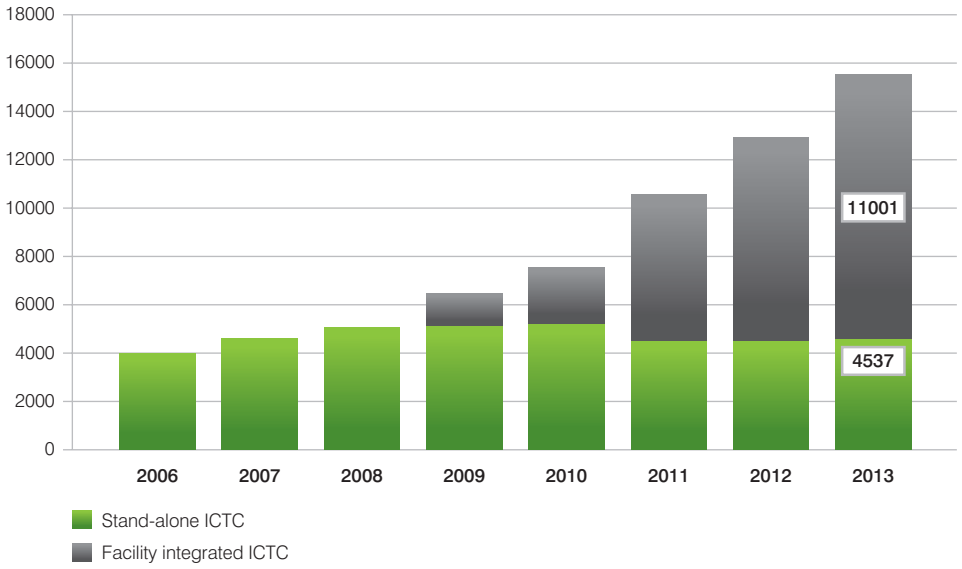
3.1 HIV service delivery mechanisms and coverage

3.1.1 HIV testing and counselling (HTC)

The first case of HIV in India was detected in 1986 in Tamil Nadu, quickly followed by detection in other high HIV prevalence states. Several years later the national AIDS control programme phase-1 (NACP I-1992 to 1999) was launched with a focus on prevention services including behavior change communication, condom promotion, etc. Voluntary counselling and testing (VCT) services were started only in 1997 in few tertiary hospitals in large medical schools in the high prevalence states. During NACP phase-II (1999 to 2006), efforts to expand the VCT services were made with a vision to establish at least one facility in each district of the country. However, true expansion of VCT services took place only during phase-III of NACP (2006 and 2011), particularly in the six high HIV prevalence states, where VCT facilities were established up to primary health centre level in some districts. In the rest of the country, VCT services remained available only at the district level.

The VCT centres provided HTC along with prevention of parent to child transmission (PPTCT) and TB/HIV services. Therefore they were later branded as integrated counselling and testing centres (ICTC) by NACP. During the initial years ICTCs were established as stand-alone facilities for HTC to avoid stigma and discrimination, but as the epidemic deteriorated and spread to wider areas, HTC services were found lacking. This delayed HIV screening, detection and linkage to care, and resulted in high mortality. The NACP decided to enhance access to HTC services by continuing establishment of stand-alone centres at secondary and tertiary hospital level and establishing facility-integrated counselling and testing centres (F-ICTC) using existing staff and infrastructure at primary health centres. The F-ICTC model envisaged provision of sustainable services through task shifting of existing staff and integrating within the general health services. At these centres, nurses were trained for counselling, and laboratory technicians for HIV testing. During the latter part of NACP-III, the establishment of the stand-alone ICTC was gradually tapered and F-ICTCs were expanded. Currently, there are more F-ICTCs in India than stand-alone centres.This enhanced the access to testing services, although largely in HIV prevalence states. Figure 6 shows the scaleup of HIV testing facilities.

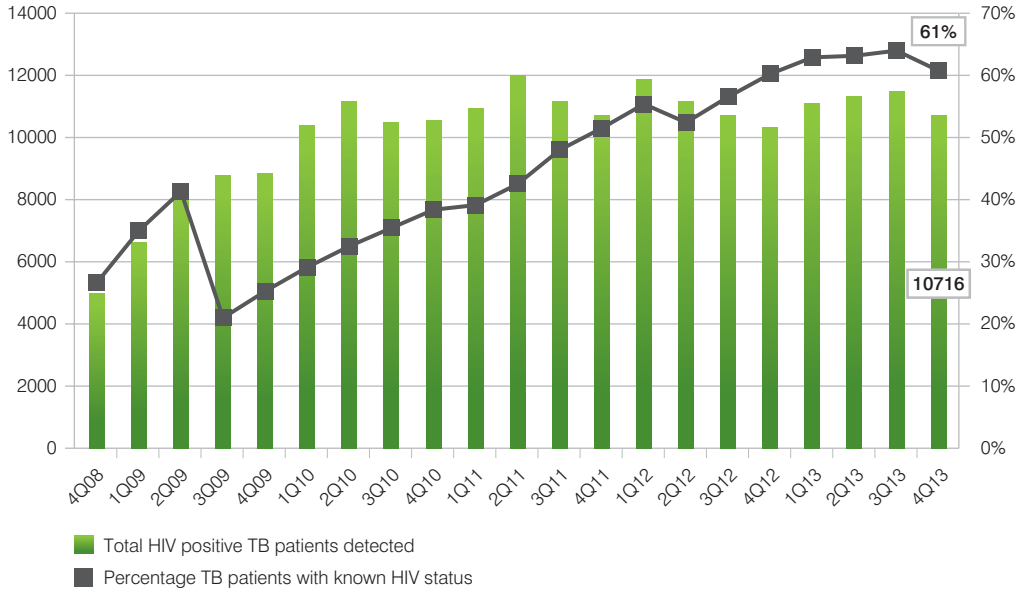
Figure 6: Scale-up of HIV testing facilities in India



3.1.2 HIV testing coverage and detection of HIV-associated TB

After 2008, as the number of HIV testing facilities increased, the proportion of TB patients with known HIV status increased threefold. Detection of HIV-positive TB patients followed a similar trajectory during the initial two to three years, but this has plateaued over the last two years.

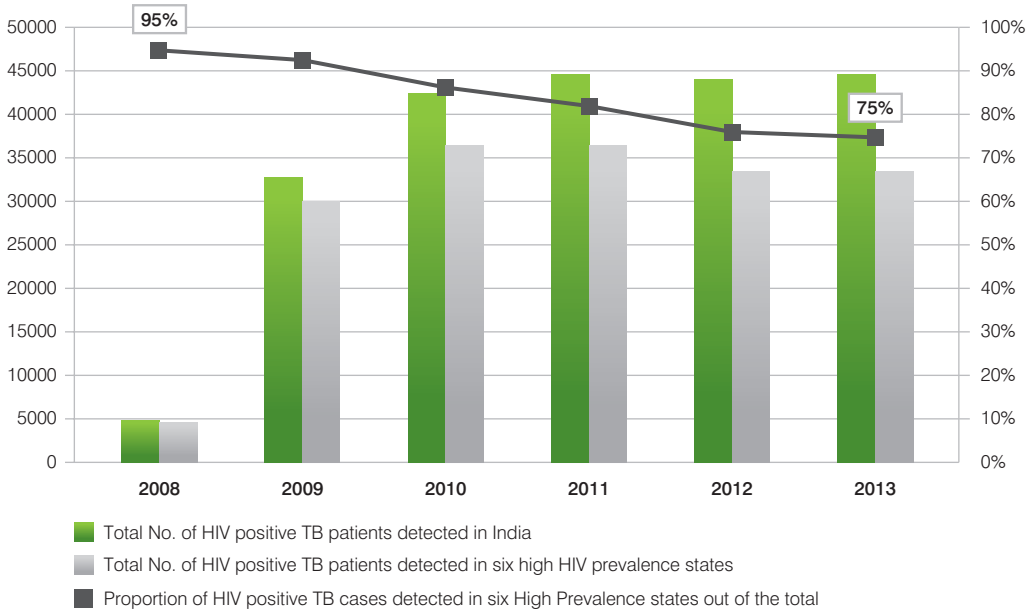
Figure 7: Trend of HIV testing coverage and detection of HIV-positive TB patients in India



Note: in 3Q 2009 PITC among TB patients expanded to states other than the six high prevalence states, hence the denominator here consists of all TB patients in these states and the testing proportion decreased.

The majority of detected HIV-positive TB patients occurred in the six high prevalence states in initial years, since HIV testing facilities were concentrated there. As testing services expanded to rest of the country, particularly due to establishment of F-ICTCs, the detection of HIV-positive TB in other states increased. This trend is likely to continue in the future.

Figure 8: Trend of detection of HIV-positive TB patients and relative contribution of six high prevalence states in India



Although the HTC services expanded over the past decade, gaps exist in the detection of PLHIV even in high prevalence states. Reasons being not all PHCs provide HTC services and frequent turnover of trained staff. It was therefore necessary to enhance access to testing further to a more decentralized level. To achieve this, NACP introduced HIV screening services using the **whole blood finger prick test (WBFPT)** at the primary health sub-centre level. The primary health sub-centre is most peripheral health unit in India, distributed one for every 5000 population and manned by a qualified auxiliary nurse midwife (ANM). The WBFPT is easy to administer and read

with a short training. ANMs are also trained to provide pretest information. All clients who screen positive are then referred to the nearest stand-alone ICTC for elaborate counselling and confirmation of the screening test result. Since sub-centres are the first point of contact of the community with health system, this is a strategic location for HIV screening in pregnant women, TB patients, HRGs in rural areas, etc. Availability of these services is being gradually scaled up across the country.

3.1.3 Anti-retroviral treatment (ART) services and coverage

3.1.3.1 ART centres

The programme for free anti-retroviral therapy (ART) was launched in India on 1 April 2004 at eight government hospitals in six high HIV prevalence states. Over the last decade, the ART programme expanded significantly in terms of number of facilities as well as beneficiaries. By December 2012, more than 380 ART centres were functional across India (Figure 9) and about 1.4 million individuals were enrolled into HIV care. By September 2014, the number of ART centres had increased further to 448. Initially, ART centres are established in tertiary care hospitals, preferably those attached to medical college or district hospitals, primarily in public sector. This is due to the availability of appropriate facilities and specialist doctors (physicians, psychiatrist, dermatologist etc.) As the number of PLHIV increased particularly in high HIV prevalence states, patient load at ART centres became large and unmanageable. NACP then started to establish ART centres at the sub-district level where facilities and specialist doctors were available.

Similar to HTC, the ART services were also concentrated in high prevalence states and districts with large number of districts in the rest of the country lacking any ART facility. Table 7 illustrates that about 60% ART centres in the country were functioning in only six states in 2012. This represents the major hurdle in uptake of ART. In 2009-10, NACP conducted operational research to assess the quality of ART services; this identified long distances to travel for ART and long waiting time at ART centres as two critical barriers for HIV care and support services. These affected services in both the persons newly diagnosed but not enrolled in HIV care, and those lost to follow-up after enrolment. To minimize losses in both these situations, NACP decided to decentralize ART services gradually as described below.

3.1.3.2 Link ART centres

Link ART centres (LACs) are established at district or sub-district level to enhance access to ART services when patient load at an ART centre becomes unmanageable or if there is no ART facility in a district. This involves training of existing staff, including the doctor at the health centre; introduction of simplified recording and reporting tools; and multitasking by existing NACP staff (usually the counsellor at ICTC within the facility).

The LACs primarily serve to dispense ARV medicine close to a patient's residence, but they remain linked with the nearest ART centre referred as its nodal ART centre, for mentoring support in day-to-day management of the patient. Initial ART registration and prescription of ART is done at the nodal ART centre, and a patient receives ART for first six months from the same facility. When she/he stabilizes on ART, the ART staff offer an option to continue ART from LAC. If a patient chooses to enrol at LAC, necessary formalities for referral are completed. The nodal ART centre continues to monitor the patient's progress in terms of response to ART, drug toxicities, etc. every six months through follow-up visits.

NACP has established more than 840 link-ART centres across the country. However, like other health HIV care infrastructure, facilities are currently concentrated in high HIV prevalence states and districts (Table 7). About 10% of individuals on ART in India currently receive ART from the LACs. The uptake of ART from LAC remains limited at present due to preferences for a higher centre for treatment and issues around stigma. However, strengthening this model further and ensuring decentralization in the rest of the country is an important priority activity for NACP over the next five years (2012-2017).

3.1.3.3 Link ART-plus centres (LAC-plus)

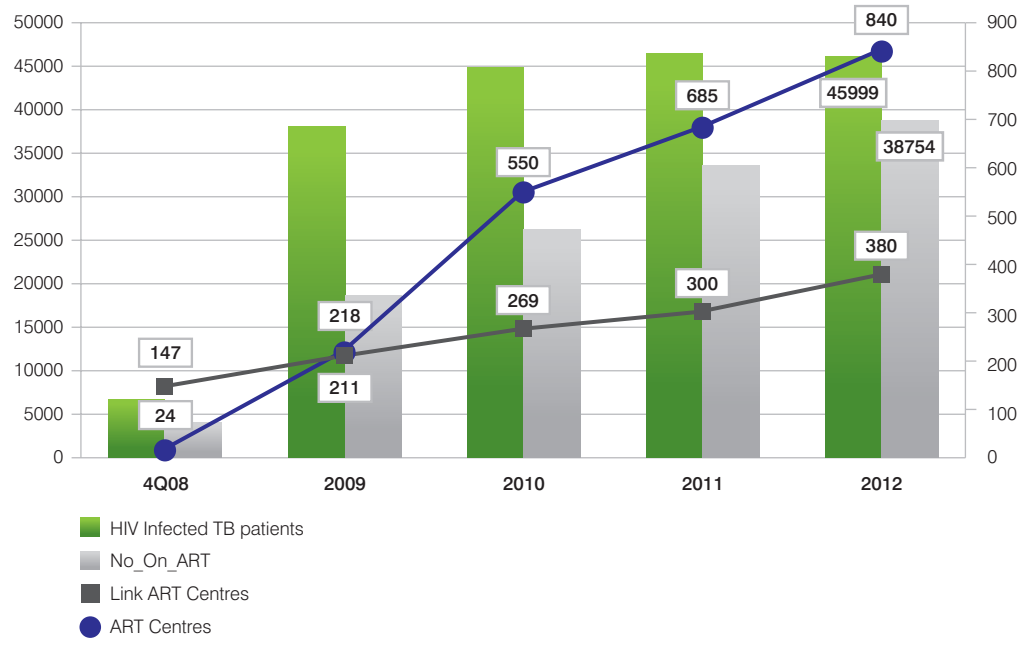
A significant proportion of HIV-positive persons detected at the ICTCs fail to enrol at ART centres due to lack of symptoms or long distance to ART centres. Although the LACs improved access, this was limited to continuation of ART rather than enrolment. PLHIV had to travel to ART centres for registration and ART initiation. LACs did little to reduce gap between detection and enrolment into care. Therefore, NACP upgraded some LACs for enrolment of PLHIV (pre-ART registration). Facilities were selected for upgrading based upon existing managerial capacity,

availability of doctors and nurses, and a functional laboratory. NACP provided additional funding for hiring a nurse to support programme implementation and streamline the processes. Existing staff, including doctors, are trained and necessary supplies of drugs and logistics is ensured. These centres are then designated as "LAC-plus" centres given the additional functions of pre-ART evaluation, base-line investigations, collection and transportation of specimen for CD4 testing and pre-ART registration. All PLHIV can be enrolled at these facilities and retained until they become eligible for ART due to development of opportunistic infection or due to clinical/ immunological deterioration. In either case they are promptly referred to nodal ART centre and considered for ART initiation. HIV-positive TB patients can also be enrolled at these centres but are referred immediately for ART initiation.

The fact that LAC-plus centres complete baseline evaluation and investigations prior to referral saves time at ART centre and facilitates early ART initiation. NACP initiated establishment of LAC-plus centres in 2012 and more than 183 out of the 840 LAC are already upgraded (Figure 9). This model is planned for expansion across India over next few years.

LAC and LAC-plus models are small incremental steps to enhance access to ART services. While they have marginally reduced loss to follow-up, they do not ensure early ART particularly in HIV-positive TB patients, where timeliness of ART is critically important to save lives.

Figure 9: Scale-up of ART services and progress in ART coverage in HIV-positive TB patients



Source: RNTCP quarterly reports /NACP data for infrastructure

3.2 TB service delivery mechanisms

The national TB control programme was launched in India in 1962. TB diagnosis and treatment services were integrated into general health system from the beginning and hence are uniformly available across the country. Only 30% of TB facilities are located in six high HIV prevalence states, compared to 60% of HIV facilities (Table 6 and Table 7). Under the revised NTP (RNTCP), starting in 1999, access to TB diagnosis was further enhanced with establishment of quality assured microscopy facilities called designated microscopy centres (DMC) at every 100,000 population across India. DMCs are currently located at all the health facilities up to sub-district level hospitals (i.e. block level (Table 6)), and also at about 30% primary health centres. Currently about 13,000 DMC's exist in India.

The anti-TB treatment (ATT), which is directly observed treatment with short course chemotherapy (DOTS), is available at all health facilities in the country and at each level of the public health system (Table 6). Access to DOTS is further enhanced through a large network of private doctors engaged formally by RNTCP, and community

volunteers identified by peripheral health workers. The private doctor or community volunteers are identified in the neighbourhood of patients, so that s/he is acceptable to patients and accountable to health systems. RNTCP offers cash incentives for these services. These mechanisms ensure the availability of treatment for all TB patients within one mile of their residences.

Table 6: Public health infrastructure in India, share of six high HIV prevalence states (2012)[10]

Facility	Population norm	Level	Total number	No. (%) in six high HIV prevalence states
District hospital	All districts	Tertiary	683	121 (18%)
Sub- district hospital	NA	Tertiary	942	515 (55%)
Block level hospital	100,000	Secondary	4,509	1,246 (28%)
Primary health centre	20,000 -30,000	Primary	23,928	7,178 (30%)
Primary health sub-centres	3000 -5000	Primary	145,937	41,251 (28%)
Total number of government health facilities			**175,999**	**50,311 (29%)**

Table 7: TB and HIV service delivery facilities and distribution in six high HIV prevalence states in India (2012)

Facilities	Total number	Core function	No (%) in six high prevalence states
Designated microscopy centres (DMC)	12,945	Sputum smear microscopy	3849 (30%)
TB treatment facilities	175,999	Directly observed treatment (DOTS)	50,311 (29%)
Stand-alone ICTC#	4508	HIV counselling, and testing for confirmation of HIV status	2034 (45%)
F-ICTC	7048	HIV screening using one rapid test or Whole Blood Finger Prick Test (WBFPT)	4733 (67%)
ART centres	380	Initiation and follow-up of ART and linkage to care and support services	224 (59%)
Link ART plus centres (LAC-plus)	183	Pre-ART registration, base line evaluation, investigations and referral to nodal ART centre for ART initiation, OI management etc.	518 (62%)
Link ART centres (LAC)	657	Continuation of ART in stable cases	

 # integrated counselling and testing centres

3.3 Patient flow

3.3.1 HIV detection and linkage

HIV-infected persons in India are detected either at stand-alone ICTC or the F-ICTCs which provide voluntary counselling and testing. In a select group of patients (including TB patients), provider-initiated HIV testing and counselling (PITC) is implemented. HIV-positive TB patients receive referrals to ART centres for enrolment into HIV

care by a counsellor or nurse at ICTC/F-ICTC. To facilitate this linkage, a robust referral and feedback mechanism exists which is routinely monitored by district level unit of the NACP. Linkages have improved over the past few years particularly in six high HIV prevalence states, although it remains a major challenge in rest of the country.

3.3.2 Provision of ART

Doctors at the ART centre initiate ART after thorough baseline investigations, clinical evaluation and CD4 testing (although all HIV-positive TB patients are eligible for ART). Patients receive adherence counselling in three separate sessions at an interval of one to two weeks before ART initiation. The ARV drugs are dispensed by qualified pharmacists and patients report to the centre every month for clinical evaluation and drug collection. They also undergo CD4 testing every six month. At the end of the first six months on ART, s/he is thoroughly evaluated and offered an option to continue ART from an *LAC* if located close to residence. If agreed s/he is transferred to *LAC* and NACP staffs at these centres dispense drugs as prescribed by the ART centre. Patients are referred back to ART centre if they develop side effects or deteriorate clinically. When available PLHIV may also be referred to the *LAC-plus* centre and be enrolled in the pre-ART register. The *LAC-plus* centre keeps the nodal ART centre informed and makes a referral once an individual becomes eligible for ART. The HIV-positive TB patients receive ART through same mechanism. They are detected either through PITC among TB patients or intensified case finding at ICTC, ART centre or the LAC. They are referred to the ART centre or to the nearest LAC-plus centre, and registered while continuing TB treatment from nearest DOT centre. They are required to travel to the ART centre every month for drug collection. At the end of TB treatment they report back to the ART centre for necessary changes in ART.

Linkage of HIV-positive TB patients to ART and co-management of TB and HIV are challenging. The key to successful treatment outcome is ***early linkage*** to the ART facility, and ***prompt initiation of ART*** once linked. Both present unique challenges. While the linkage depends upon the extent of access to ART services, the ART initiation may be delayed due to poor clinical condition or physician apprehension, due to high pill burden and drug toxicity. Over the last few years, both aspects improved in India due to improvement in access to ART and adoption of the WHO ARV guidelines for TB patients. This issue is discussed further in section four.

3.4 Monitoring and evaluation

3.4.1 Recording and reporting

The recording and reporting of collaborative TB/HIV activities in India primarily follows the principle of division of labour and systematic cross-sharing of data. The programme implementing a particular activity also ensures systematic recording of respective data at facility level and reports the same to state and national levels. These data collected by both programmes are systematically exchanged at district, state and national level using the established forums and mechanisms.

3.4.1.1 Provider-initiated HIV testing and counselling (PITC) of TB patients:

RNTCP is responsible for this activity, and ensures recording of the HIV status of all registered TB patients, as well as CPT and ART status, on TB treatment cards. This information is then transcribed onto the TB register maintained at the basic management unit for consolidation and reporting every quarter. Quarterly reports are generated at the basic management unit level and sent to district, state and national levels. Currently, a dual system of paper-based recording and web-based reporting exists. RNTCP is also rapidly expanding the case-based web-based data system called Nikshaya, which will soon replace the existing system. Quarterly reports are systematically shared with NACP at all levels.

3.4.1.2 Intensified case finding (ICF)

ICF activities at HIV testing and ART centres are systematically documented and consolidated at facility level using paper-based systems, and reported to state and national level using a web-based system. The following key steps are involved in recording and reporting of ICF:

1. All clients attending HIV testing centres and PLHIV attending ART centres are clinically screened for TB symptoms at every encounter.
2. All presumed TB cases are enlisted on a paper format called the “line-list” having two sections. Section one is used to record patient information including age, sex, address and date of referral for TB investigations.

3. At the end of the month, the half-filled line-list is shared with RNTCP staff, who complete information in section two pertaining to details of TB investigation and TB treatment initiation.
4. RNTCP staff returns the completed line-list to NACP at the end of second month. NACP then consolidates information from the completed line-list into a monthly report, and sends this electronically to state and national level
5. Before reporting to higher levels, the centre-wide reports are discussed in monthly TB/HIV coordination meeting at district level for validation.
6. Consolidated facility-wise reports are also shared with RNTCP at state and national level routinely.
7. This mechanism of line-listing and sharing of information between NACP and RNTCP ensures individual patient tracking and linkage to care.

Annexes 1 and 2 show the formats used for ICF activities. The RNTCP implements all WHO recommended formats for recording and reporting.[11]

3.4.2 Joint monitoring and evaluation of collaborative TB/HIV activities

In addition to joint supervision by programme managers and supervisors from NACP and RNTCP mentioned in section 2.2, the following three mechanisms contributed immensely in strengthening the collaborative TB/HIV activities in India.

3.4.2.1 International monitoring missions:

During the development of national strategic plans, the RNTCP and NACP invite international partners to undertake missions in India and to advise the national programmes on priority interventions. The RNTCP missions are called joint monitoring missions and NACP joint international review mission (JIRM). Collaborative TB/HIV activities were consistently included in the terms of reference of these missions over the past decade. Recommendations from the review mission contributed to policy change and adoption of key interventions over these years. These included, for example, the integration of HIV testing into TB microscopy services, and the adoption of IPT (Isoniazid Preventive Therapy) as a strategy.

3.4.2.2 Centrally-driven internal evaluations

The RNTCP undertakes evaluation of two states every quarter by forming a central team consisting of national TB and HIV programme managers, consultants, representatives from key technical partners, state TB officers and representatives from the national TB research institutes. This team visits the selected state for about one week, starting with a briefing meeting with state authorities, programme managers and staff. This is followed by a visit to the state reference laboratory, state drug store and state AIDS control programme office. The evaluation team then undertakes field visits in randomly selected districts, TB units, microscopy centres, ICTCs and ART centres. An extensive report is generated following field visits and presented to the highest health authorities in the state and programme managers. The state government ensures compliance with recommendations of the central evaluation team, and submits and reports action taken to the government of India. Review of collaborative TB/HIV activities during these evaluations has ensured ownership by state governments and facilitated smooth implementation.

3.4.2.3 State level internal evaluations

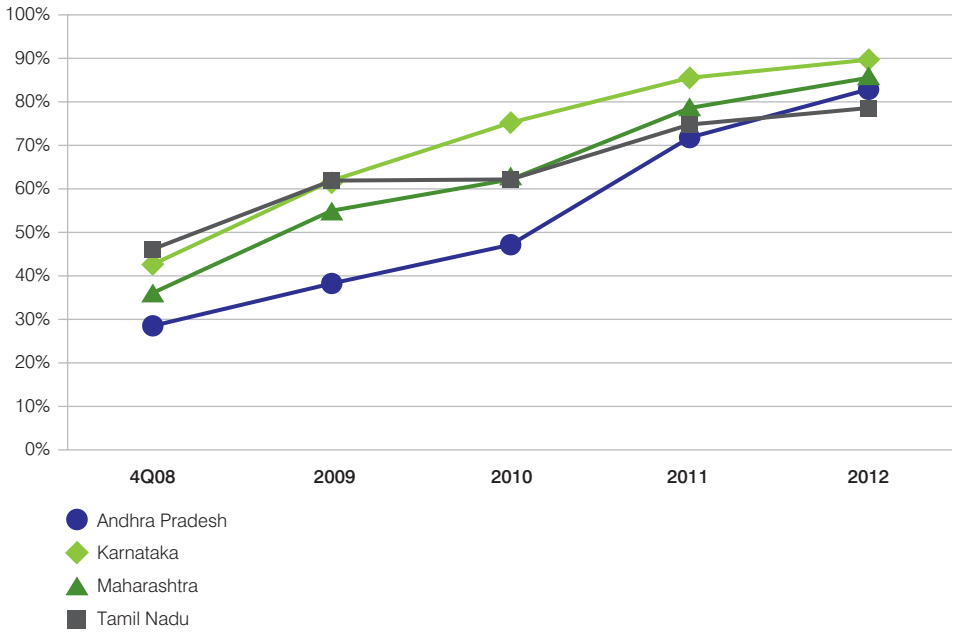
Similar to the centrally-driven internal evaluation, the state governments undertake evaluation of two randomly selected districts every quarter. The evaluation team consists of state RNTCP and NCP programme managers, representatives from state reference laboratory and pharmacies, technical consultants, district programme managers, representatives from medical colleges and the state finance officer. These teams travel to district headquarters and brief the district authorities, including programme managers and key staff. Field visits are then undertaken to randomly selected TB units, microscopy centres, DOT centres, ICTCs and ART centres; they also include home visits to patients randomly selected at the treatment centres. An extensive report is generated following field visits and presented to the highest authorities in the district and to programme staff. A copy of the report is also submitted to the government of India immediately. District and state authorities then ensure compliance with the recommendations of state evaluation team, and submit a report on action taken to the state government. Review of collaborative TB/HIV activities during these evaluations help to resolve outstanding issues between the two programmes and facilitate smooth implementation.

4. Linkage of HIV-positive TB patients to ART services

4.1 Current status

The linkage of HIV-positive TB patients to ART in India has improved over last three years and reached about 83% in 2012. Linkages were particularly successful in four large states with high HIV prevalence between 80% to 90%.

Figure 10: Trend of ART initiation among TB/HIV cases in four large high HIV prevalence states in India



(Source: RNTCP treatment outcome report)

4.2 Co-location of services and linkage to care

Availability of testing and treatment facilities under the same roof is known to increase uptake of services and to ensure early treatment initiation. Accordingly, availability of HIV and TB testing services in the same facility is likely to increase HIV testing coverage for TB patients and to enhance detection of TB among persons attending HIV care and treatment centres. Availability of ART at the same location facilitates prompt linkage and treatment initiation. The NACP and RNTCP included co-location of facilities as one of the priority interventions in national strategic plans for the next five years, so as to enhance coverage and quality of services. This is supported by the observations made during field visits undertaken to two large states in India for the compilation of this case study (Table 8).

4.2.1 Co-located HIV and TB testing facilities

Currently, about 70% of DMCs in high HIV prevalence states have co-located HIV testing facilities (this percentage is only about 35% in remaining states) (Table 8). Moreover, in states like Tamil Nadu, Karnataka and Andhra Pradesh the co-location is higher (80%), as F-ICTCs were strategically established at health centres with a DMC in these states. This resulted in an achievement of more than 90% TB patients with known HIV status, while remaining states managed only about 50% patients with known status. Co-location of TB and HIV testing facilities is crucial for detection of HIV-associated TB.

Table 8: Co-location of TB and HIV testing centres and coverage of HIV testing among TB patients, 2013 - India

State	Total Number of DMC	Number of DMC with co-located ICTC	Percentage co-located HIV testing facilities	Proportion of TB patients with known HIV status
Tamil Nadu	785	652	83	92%
Karnataka	665	516	78	95%
Andhra Pradesh	931	735	79	95%
Manipur	55	37	67	73%
Nagaland	48	22	46	82%
Maharashtra	1441	1001	69	87%
Total in six HP states	**3925**	**2963**	**75**	**87%**
Remaining states	**9589**	**4793**	**50**	**52%**
Total India	**13514**	**7756**	**57**	**63%**

4.2.2 Co-located testing and ART facilities

To assess the role of co-located testing and treatment sites in patient care, field visits were conducted in two high HIV prevalence states in India, Maharashtra and Andhra Pradesh. This involved visits to ART centres, TB BMUs, ICTCs and DMCs (Table 9). It was noted during these visits that about 76% PLHIV detected at ICTCs co-located with ART centres were registered in HIV care within one quarter of detection. As per NACP guidelines the ICTC counsellors at these centres ensured referral and tracking of every HIV-positive person until s/he reaches the ART centre. They also had liaisons with ART centre staff for ensuring prompt enrolment into HIV care.

Enrolment of HIV-positive TB patients into HIV care was found to be higher than that of non-TB patients. This was because in addition to the efforts of ICTC counsellors, the RNTCP staff were also involved in facilitating linkage to ART. RNTCP supervisors routinely conducted personal home visits and followed up with patients regularly during visit for DOTS to ensure that patients reached ART centre and were enrolled in care. The NACP decision to adopt the WHO recommendation of ART irrespective of CD4 count for TB/HIV patients helped improve linkage to ART to some extent.

Table 9: Comparison of ART linkage among HIV infected general clients and TB patients within one quarter of HIV diagnosis

State	Number of ART /LAC-plus centres visited	Total no.of general clients diagnosed as HIV-positive	No. (%) of HIV-positive general clients linked to ART	Total no.of HIV- positive TB patients detected	Total no.(%) of HIV-positive TB patients linked to ART
Maharashtra	8	1577	1218 (77%)	288	246 (85%)
Andhra Pradesh	7	497	368 (74%)	68	49 (72%)
Total	**15**	**2074**	**1586 (76%)**	**356**	**295 (83%)**

4.3 Timeliness of ART

Although linkages of HIV-positive TB patients to ART are improving, case fatality continues to be very high compared to HIV-negative TB patients (Table 4). Reasons for this difference may include delays in detection of HIV-associated TB, enrolment into ART care or ART initiation in particular. Although WHO recommended ART for HIV-positive TB patients irrespective of CD4 count in 2010, India continued with the policy of ART below CD4 less than 350/cu mm until November 2011. However, during the supervisory visits to ART centres from national and state level it was noted that uptake of the revised policy remained limited and between 30-35% HIV positive TB patients registered in HIV care were not started on ART. These prompted NACP to undertake a quick survey to understand extent of treatment delay. This survey was conducted in 22 randomly selected ART centres across India and the following key observations were noted:

- About 22% HIV positive TB patients enrolled in HIV care were not started on ART;
- Median duration between start of TB treatment and ART initiation was 20 (14-40) day;.
- In about 15% patients ART was initiated after eight weeks of starting TB treatment; and
- HIV positive TB patients with higher CD4 count (more than 350/cu mm) and extra-pulmonary TB patients were less likely to receive ART early.

The national technical working group on TB/HIV deliberated on these observations and recommended routine monitoring of timeliness of ART initiation at all levels. Timeliness of ART initiation was therefore included as a reporting variable in the monthly ART reports in NACP management information system (MIS). Inclusion of this variable in MIS allowed close monitoring at facility, state and national level. Table 10 shows data reported in 1Q2013, with 18 to 37% HIV positive TB patients not been started on ART in time in high HIV prevalence states.

Table 10: Timeliness of ART initiation after enrolment of HIV positive TB patients into HIV care (January to March 2013)

State	Total HIV positive TB Patients Diagnosed	Total number of TB/HIV cases started on ART	Proportion initiated on ART within 2-8 weeks
Andhra Pradesh	1656	1362	82%
Karnataka	885	772	87%
Maharashtra	1540	1207	78%
Tamil Nadu	730	461	63%

4.4 Enablers for linkage of HIV-positive TB patients to ART

During the field visits mentioned in section 4.2.2, following critical enablers were identified for linkage of HIV positive TB patients to ART in addition to co/located services:

a. Use of simple technology for **tracking linkage**

i. **Andhra Pradesh**-Computer spreadsheets linked to google docs through software were used to document and track linkage of HIV positive persons including TB patients to ART. ICTC counsellors and ART centre staff enlisted patients detected and registered on two separate spreadsheets and shared with district monitoring and evaluation officer (MEO) daily who in turn entered the data on two separate google docs for uploading to software developed by state government. This software allowed matching of two google docs with data from testing centre and ART centres from all facilities in the state, using unique identification called PID number (person identification digit). The software produced an output of two separate lists every week –one showing detected PLHIV who are registered in HIV care and the second list showing PLHIV not yet registered. These lists are shared back with district MEO who coordinates with concerned ICTC and ART staff and ensure PLHIV not linked to ART are contacted. Using this information field staff facilitates travel of patients to ART centre for registration.

This software enabled tracking of inter-district referrals as well. Further the feedback received from state level is regularly discussed in monthly TB/HIV coordination meeting to ensure linkage of every patient. This simple low cost tool helped in real-time monitoring of linkages and has greatly contributed in improvement. NACP is contemplating adoption of this tool at national level and MEO from 5 states are already trained for a pilot test.

ii. **Maharashtra**-ICTC counsellors maintain a list of all positive persons detected on a daily basis using computer spreadsheets. These lists are shared electronically with ART centres and district TB/HIV supervisor every week. Supervisors in turn contact ART centres to obtain updates regarding registration. S/he shares the update with ICTC and TB staff. If a particular patient is not linked, efforts to trace and facilitate travel to ART centre are triggered through field supervisors. Although not as efficient as the system in Andhra Pradesh, this mechanism also manages to track majority of the patients routinely

b. Supervision and monitoring

i. District TB/HIV supervisor and NTP supervisors at TB basic management unit visit all the ART facilities in a districts every week *vice versa* NACP district supervisors visit TB basic management unit, DMCs and treatment centres regularly.

ii. These supervisory visits focus on sharing of information, review of collaborative activities at facility level and status of linkage of HIV positive TB patients to TB treatment and ART.

iii. The field observations are systematically documented and communicated to programme managers at facility and district level and key observations are also discussed during monthly coordination meeting at district level.

iv. The conduct of field visits is closely monitored and reported quarterly to state level through RNTCP programme management report.

Above supervision and monitoring mechanisms ensure consistent improvement in implementation of TB/HIV activities particularly the linkages.

c. Monthly TB/HIV co-ordination meeting at district level are regularly held between key NACP and RNTCP staff. The national programmes earmark funds for these meetings and routinely monitor their conduct. Key agenda points for these meetings include-

i. To disseminate feedback or instructions received from national and state level

ii. Review status of ART linkages of PLHIV detected during the month.

iii. NACP shares information regarding registration in HIV care, start of ART etc. with RNTCP supervisors and coordinator.

iv. TB supervisors provide information on HIV positive TB patients detected, TB treatment status and treatment outcome of registered patients.

v. Difficulties and issues noted in collaborative activities during the last month

d. Joint review of performance with NACP and RNTCP district programme managers

i. Quarterly review meeting of district programme managers and supervisors of NACP and RNTCP are held regularly at the state level

ii. The review includes assessment of implementation of collaborative TB/HIV activities particularly linkage of HIV positive TB patients to treatment

iii. Key issues and barriers in ensuring prompt linkage and ART initiation are identified and decisions made to address the same

e. Quarterly meeting of state TB/HIV co-ordination committee (SCC):

SCCs are functional in both the above states visited, which meet every quarter under the leadership of senior state level administrator along with state TB and HIV programme managers. The committee reviews progress in programme implementation at district level, discuss new initiatives and adopt state specific policies to improve performance.

4.5 Opportunities for collaborative TB/HIV activities in national strategic plans for TB and HIV (2012 to 2017)

The national strategic plans of RNTCP and NACP offer several opportunities to address major programme challenges over next five years. Table 11 summarizes key challenges and opportunities:

Table 11: Collaborative TB/HIV activities in India-key challenges and opportunities

Key challenges	Opportunities	Provisions contained in the TB and HIV national strategic plan (2012-17)
Low HIV testing coverage among TB patients in the erstwhile low HIV prevalence areas	Integration of HIV testing and counselling into RNTCP services	To establish HIV screening facilities at all RNTCP designated microscopy centres not having a co-located HIV testing facility by 2017
Delay in detection of HIV associated TB	1. PITC among presumptive TB cases 2. Strengthen intensified case finding at ART & LAC facilities	1. Implementation of PITC among presumptive TB cases in all high HIV prevalence areas (ANC prevalence >1%) in the country 2. Strengthen implementation of WHO recommended clinical screening using four TB symptom at all ART centres 3. Provision of access to rapid TB diagnostic using Xpert MTB/RIF to all presumptive TB cases among PLHIV
Low number of ART and Link ART centres in the erstwhile low HIV prevalence areas	National health mission of the Government of India is investing significantly for strengthening health infrastructure in urban and rural areas upto the sub-district level, including the laboratories, health workers etc.	1. Establish 220 more ART centres (upto total of 600) and 660 more link ART centres (upto total 1500) over next five years 2. Up-gradation of all LAC to LAC-plus to enhance enrolment in HIV care 3. Integration of functions of ART programme into general health facilities at district and sub-district level 4. Advocacy with general health authorities to extend human resource support for establishment of ART centres and LAC
Sub-optimal linkages of HIV positive TB patients to ART	1. Optimal utilization of existing manpower and resource under NACP and RNTCP 2. Strengthening information systems to track, follow and retrieve PLHIV lost to follow-up through innovations like use of smart card etc.	1. RNTCP plans to establish basic management units at all sub-district revenue units called block/taluks, which are at a level lower than existing units. This also implies availability of additional human resources for TB work over 2012-17. 2. Enhanced budgetary support for TB and DR-TB case holding under RNTCP 3. Provision of travel support for linkage to ART centres in the RNTCP plan

5. Summary

HIV-associated TB is fatal if not treated. Early detection and prompt treatment is critical to minimize mortality. Early detection requires effective implementation of provider-initiated HIV testing and counselling in TB patients and intensified TB case finding among PLHIV. In India these activities are executed by two separate and strong vertical national programmes: RNTCP and NACP. Close collaboration between the two programmes is necessary to ensure 100% detection and ART for all HIV-positive TB patients. To facilitate this, the national programmes have established strong mechanisms for collaboration at national, state and district level and invested significant resources to strengthen implementation.

The major hurdle in detection of all HIV-positive TB cases and universal ART is the lack of decentralized availability of HIV testing and treatment services (unlike TB services). This is due to the fact that India has a concentrated HIV epidemic which is now spreading to historically low prevalence areas. The epidemic in high HIV prevalence areas in general is on a decline and that in historically low prevalence areas increasing. Moreover, service delivery infrastructure for both HIV testing and treatment is lacking in the emerging high HIV burden areas leading to significant gaps in detection and ART coverage. NACP and RNTCP are making concerted efforts to bridge these gaps. The NACP is scaling up HIV testing and ART services by establishing stand-alone ICTC and ART centres in emerging high burden areas coupled with establishment of facility integrated testing and treatment centres (F-ICTCs and LACs). RNTCP is facilitating provision of HIV testing services through TB microscopy centres (DMCs) using existing human resources. These efforts aim to optimize utilization of existing resources and make the interventions sustainable. Further, the national programmes are working to ensure availability of both HIV and TB testing and treatment services under one roof or at least in close vicinity (i.e. co-located to enhance coverage and ensure prompt initiation of ART). Strengthening service delivery infrastructure combined with strong mechanisms for collaboration between NACP and RNTCP supported by close supervision and monitoring are likely to improve coverage of services and thus reduce mortality.

This experience of scale-up of collaborative TB/HIV activities in a concentrated HIV epidemic setting of the size of India offers important lessons for countries facing similar scenarios. Below are the key lessons learned which may contribute to the successful implementation of collaborative TB/HIV activities in other settings:

Lessons learned:

1. Highest level of **political and administrative commitment** is necessary for successful implementation of collaborative TB/HIV activities (e.g. The secretary government of India and state health secretaries who are highest authorities chair TB/HIV coordination committees in India and they ensure a meeting every quarter).
2. HIV-associated TB affects performance of both NTP and NACP. It is therefore important that **collaborative TB/HIV activities are owned jointly by both the national programmes**, (e.g. NACP and RNTCP in India have included collaborative TB/HIV activities in their respective national strategic plans since their inception).
3. **A joint national policy** to govern implementation of collaborative TB/HIV activities is critical to ensure role clarity for NTP and NACP managers and staff at all levels of health system, (e.g. adoption of a joint national policy framework for collaborative TB/HIV activities in India).
4. It is important to establish a **mechanism for ongoing dialogue** between programme managers and staff in order to create an enabling policy environment; plan and allocate resources; review implementation; redress grievances; and take prompt decisions (e.g. TB/HIV coordination committees are established at the national, state and district levels in India and their functioning is meticulously monitoring in India).
5. **Mechanisms for technical discussions** through data exchange and performance reviews is important for programme improvement and guide policy change (e.g. technical working groups are established at national and state level along with monthly coordination meetings of programme staff at district level in India).
6. **Joint supervision and monitoring** provides the backbone for successful implementation of collaborative TB/HIV activities (e.g. review of collaborative TB/HIV activities through the international monitoring missions, centrally driven internal evaluations of state and state internal evaluation of districts at regular intervals, as promoted by the NACP and RNTCP in India).

7. The NACP and NTP should **allocate resources** for coordination of implementation at national, subnational and facility levels (e.g. allocation of resources by RNTCP and NACP to hire nodal persons for coordination of TB/HIV activities at national, state and district levels).

8. It is critical to ensure **decentralized availability of HIV and TB testing and treatment services** in order to enhance uptake and improve quality. This can be achieved through optimal utilization of existing human resources and integrating service delivery (e.g. facility integrated ICTC, link ART centres and HIV testing through TB microscopy services in India).

9. **Strong management information systems** under the NACP and NTP which are compatible with each other is important to generate quality programme data and guide policy decisions. Use of web-based data systems facilitates this process (e.g. RNTCP and NACP incorporated collaborative TB/HIV activities both in the paper based system as well as web based systems called *Nikshaya* and *SIMS* (strategic information management system)).

10. It is important to **monitor implementation of key interventions** in addition to basic TB/HIV activities, by adding relevant data variable in HMIS and using additional indicators.(e.g. NACP and RNTCP collected specific data such as co-location of HIV and TB testing facilities; timeliness of ART initiation, conduct of coordination committee meetings etc. in addition to routine data).

11. Use of **simple technology for exchange of information and tracking of referral** and feedback should be encouraged. This includes inter alia the use of computer spreadsheets, google docs and customised software to track linkages by NACP in Indian states.

12. **Operational research** to guide programme policy is a key area for joint work under TB/HIV collaboration (e.g. the NACP and RNTCP undertook joint research to answer programmatic questions such as feasibility of decentralised provision of CPT, feasibility of provider-initiated HIV testing and counselling in TB patients etc.).

Annex 1: Intensified TB case finding at ART /Link ART centres

1. Line-list of persons referred from ART centres to RNTCP

Name of District: _____ Name of ART centre: _____ Month /Year: _____

To be completed by ART/CCC Nurse										To be completed by STS					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Sr.No.	Pre-ART/ART number	Complete name & complete Address	Age	Sex	Date of referral to RNTCP for investigation	Name of facility referred to	Is patient diagnosed as TB-Yes or No	If diagnosed as TB,-Specify whether patient is sputum positive TB, sputum negative TB or Extrapulmonary TB	Date of referral to RNTCP for treatment	Date of starting TB treatment	TB number with TU name	Is the patient referred outside district(yes/No)	Is the patient initiated on Non-RNTCP treatment (Yes/ No)	Remark	

Signature of ART nurse: .....
Date of completion of Line-List: .....

Signature of medical officer ART: .....

Signature of supervisor (TB unit where ART centre is situated): .....
Date of completion of line-list: .....

Signature of district TB officer: .....

2. Monthly TB/HIV report from ART/ Link ART centres

HIV/TB section of Monthly ART centre report	
TB Diagnosis & Treatment (source-completed HIV/TB line-list- 1 month prior to the reporting month)	
1) Number of HIV positive patients attending ART centre during the month(Pre-ART and ART)	
2) No. of TB Suspects referred from ART centre for TB diagnosis	
3) Out of the above persons, number diagnosed as having TB :	
(i) Sputum Positive TB	
(ii) Sputum Negative Pulmonary TB	
(iii) Extra-Pulmonary TB	
4) Total Diagnosed TB Patients	
5) Out of (4), number of TB patients receiving RNTCP treatment within the district	
6) Out of (4), number of TB patients referred outside district for RNTCP treatment	
7) Out of (6), number started on RNTCP treatment	
8) Out of (4), number of TB patients receiving Non-RNTCP treatment	
Treatment (source-HIV/TB register-data 2 months prior to reporting month)	
1) Total number of cases enrolled in HIV/TB register 2 months prior to the reporting month	
2) Out of (1) number of cases initiated on CPT	
3) Out of (1) number of cases initiated on ART	

Annex 2: Intensified TB case finding at ICTC/F-ICTC

1. Line-list of persons referred from ICTC to RNTCP

Reporting month:_____ **Year:**_____ **Name of ICTC:**_____ **Name of District:**_____

To be completed by ICTC Counsellor							To be completed by the STS					
1	2	3	4	5	6	7	8	9	10	11	12	13
Sr.No.	PID NO.	Complete Name & Complete Address	Age	Sex	Date of referral to RNTCP	Name of facility referred to	Is patient diagnosed as TB –Yes or No	If diagnosed as TB, specify whether patient is S+ TB, S- TB or EP TB	Is patient initiated on DOTS – Yes or No	Date of Starting Treatment	TB No.	Remarks

Signature of Counsellor: ..... Signature of MO- ICTC: ..... Name of the TU: ..... Signature of DTO/CTO/MO-TU: .....

Date of completion: ..... Signature of STS: .....

Date of Completion: .....

2. TB-HIV monthly report from ICTC

Reporting month: _____ Year:_____	**Name of ICTC:_____ District:_____**

I. Total number of general clients attending ICTC:	
a) Total no. of clients who attended ICTC in the month (excluding PPTCT clients)	

II. Referral of suspected tuberculosis cases from ICTC TO RNTCP		
	HIV positive	**HIV Negative**
a) No. of persons suspected to have TB referred to RNTCP diagnostic services		
b) Of the referred TB suspects, No. diagnosed as having:		
(i) Sputum-positive TB		
(ii) Sputum-negative TB		
(iii) Extra-Pulmonary TB		
c) Out of above (b), diagnosed TB patients, number receiving DOTS		

III. Referral of Diagnosed TB patients from RNTCP TO ICTC	
a) No. of RNTCP registered TB patients tested for HIV	
b) Out of above (a), No. detected to be HIV Positive	

Signature of Medical Officer – In charge ICTC:

.....

Name of Medical Officer In-charge ICTC:

.....

Annex 3: Referral and feedback forms

1. Referral to Integrated Counselling and Testing Center

(To be filled in TRIPLICATE by PHI MO. One copy for record, 2 with patient, one of which is for feedback)

Dear counsellor,

The patient with the following details is being referred for VCT to your centre:

Name: ..... age/sex: .....

TB Number (if available): .....

Kindly do the needful and provide me feedback on the same, in a confidential manner.

Referring Provider

Name: ..... Contact number: ..... Date of referral: .....

Name of the PHI:

.....

Feedback by the Counsellor to referring provider

(To be filled in duplicate by the counsellor. One copy for patient, the other for referring MO)

Test result from ICTC

HIV positive		HIV negative	
Indeterminate		Opted out	

PID Number: ..... Date of conducting test: .....

Additional communication to the referring physician

.....

Signature of Medical officer ICTC/counsellor

.....

2. Referral to ART center

(To be filled in Triplicate by PHI MO. One for record, one for ART centre and one for feedback)

ART Centre (location, address): .....

Dear Doctor,

I am referring: ..... Age, ... Sex, ... who is a diagnosed HIV infected TB patient to your ART centre for further evaluation.

(If applicable, Type of TB Case: ..... & TB number: .....)

Referring Doctor

Name & signature: .....

Contact number: .....

Date: .....

Name & address of the PHI: .....

District/TU Name: .....

Details regarding ART

(to be filled by the ART medical officer and sent to the referring PHI through the patient) .....

Pre- ART registration number: .....

CD4 count: .....

Patient started on ART - If Yes

ART registration number:

If No Reason: .....

Patient started on CPT - Yes/No

If no reason: .....

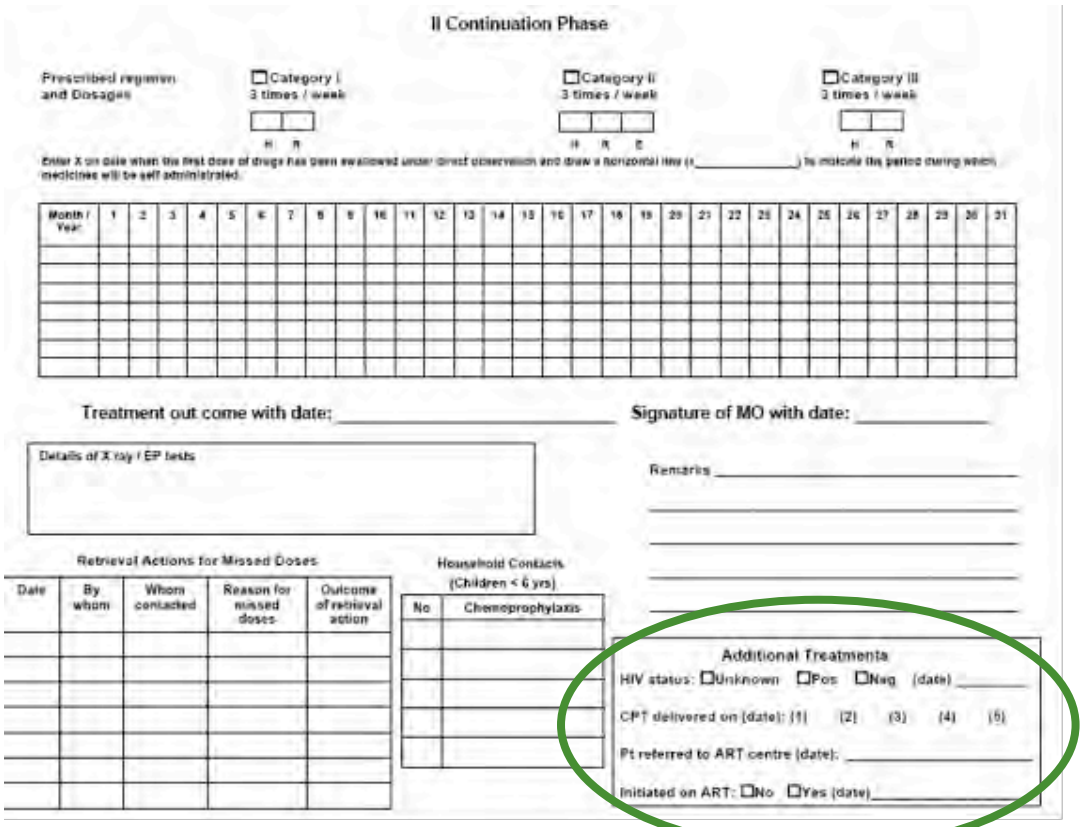
Additional information: .....

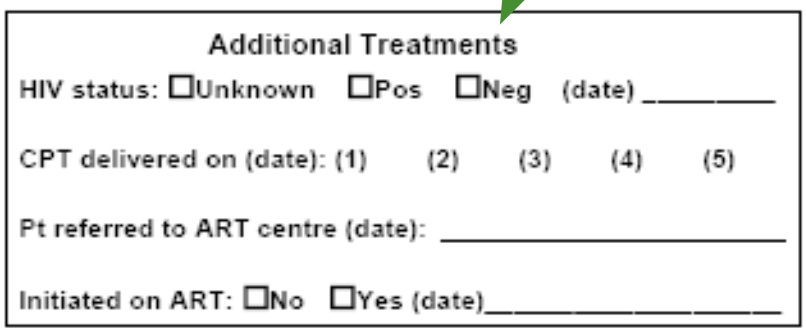
Name & signature of the ART Medical Officer Date

.....

Annex 4: RNTCP recording formats

1. Back of TB treatment card, and space for recording HIV status and additional treatment





2. TB Register

Left side of the TB register

Revised National Tuberculosis Control Programme – TB Register Quarter_____ Year_____

TB No.	Date of Regis-tration	Name (in full)	Sex (M/F)	Age	Complete Address & Telephone Number	Name of PHI	Date of Starting Treatment	Category (I/II/III ND1/ND2)	Class (P/EP)	Type*	Pre-treatment sputum exam				HIV Status† (P/N/U)
											Date	DMC Name	Lab No	Smear	

Summary for Case Finding (DOTS Cases Only)								
	NSP	NSN	NEP	New Others	Relapse	Failure	TAD	Cat II Others
0–14 yrs								
≥15 yrs								
Male								
Female								

* Type of Patient (use complete words)
New; Relapse; Transferred in; Failure; TAD; Others

† HIV status
HIV status as reported before or during TB treatment.
P–Positive; N–Negative; U–Unknown;

Right side of the TB register

Revised National Tuberculosis Control Programme – TB Register Quarter_____ Year_____

End of I.P. / Extended I.P.				2 Months in C.P. Exam				End of Treatment Exam				Treatment Outcome#	[If HIV-pos]‡		
Date	DMC Name	Lab No	Smear	Date	DMC Name	Lab No	Smear	Date	DMC Name	Lab No	Smear	Outcome	Date	CPT (y/n)date	ART (y/n)date	Remarks

DOTS SUMMARY	Cured		Comp Tx.		Died		Default		Failed		Transfer Out	
NSP												
NSP [M|F]	M	F	M	F	M	F	M	F	M	F	M	F
NSN												
NEP												
New Others												
Relapse												
TAD												
Failure												
Cat II Others												

Treatment Outcome – use complete words
Cured, Completed treatment, Died, Defaulted, Failure, or Transferred out

‡ Additional treatments if patient HIV-positive
Required only for patients known to be HIV-positive.
If provided by any source during TB treatment, enter "Y" and approximate date. If not provided/unknown, enter "N".

References

1 The interim policy on collaborative TB/HIV activities. Geneva, World Health Organization, 2004.

2 WHO policy on collaborative TB/HIV activities: guidelines for national programmes and other stakeholders. Geneva, World Health Organization, 2012. Available at http://www.who.int/tb/publications/2012 /tb_hiv_ policy_ 9789241503006/en/

3 Technical Report India HIV Estimates 2012. National Institute of Medical Statistics, Indian Council of Medical Research and National AIDS Control Organization, Department of AIDS Control, Ministry of Health and Family Welfare (Government of India), 2012. Available at http://www.unaids.org/en/media/unaids/contentassets/documents/data-and-analysis/tools/spectrum/India2012report.pdf)

4 HIV Sentinel Surveillance 2010-11, a technical brief, National AIDS Control Organization, Department of AIDS Control, Ministry of Health and Family Welfare (Government of India), 2012. Available at http://www.naco.gov.in/upload/Surveillance/Reports%20&%20Publication/HSS%202010-11_Technical%20Brief_30%20Nov%2012.pdf)

5 Saggurti N et al. Migration and HIV in India: Study of select districts, New Delhi: UNDP, NACO, and Population Council, 2011 (available at http://www.junima.org/resources/pdf/2011HIV_IndiaHIVandMigrationReport.pdf)

6 Global tuberculosis report 2014. Geneva, World Health Organization, 2014 (Available at http://www.who.int/tb/publications/global_report/en/)

7 Database for global tuberculosis report 2014, Geneva, World Health Organization, 2014. Available at http://www.who.int/tb/country/data/download/en/)

8 Raizada N et al. Linking HIV-Infected TB Patients to Cotrimoxazole Prophylaxis and Antiretroviral Treatment in India. PLoS ONE, 2009 Jun 22;4(6):e5999.

9 Raizada N et al. HIV Seroprevalence among Tuberculosis Patients in India, 2006–2007. PLoS ONE, 2008 Aug 20;3(8): e2970.

10 Rural Health Statistics in India 2012. Statistics Division, Ministry of Health and Family Welfare. Available at: http://nrhm.gov.in/images/pdf/publication/ RHS-2012.pdf

11 Definitions and reporting framework for tuberculosis, 2013 revision. Geneva, World Health Organization, 2013 (WHO/HTM/TB/2013.2). Available at http://www.who.int /tb/publications/definitions/en/

For further information, please contact:

World Health Organization
20, Avenue Appia CH-1211 Geneva 27 Switzerland
Global TB Programme
E-mail: tbdocs@who.int
Web site: www.who.int/tb

HIV/AIDS Department
Email: hiv-aids@who.int
Web site: www.who.int/hiv

9789241508490