

Recommendations

For UATBC sites

- In order to avoid over/under diagnosis, continue to encourage private providers' usage of sputum examination, and increase access to more sensitive tests like CBNAAT. UATBC sites should closely monitor quality indicators and maintain continuous communication with the provider to bring about change to ensure diagnostic standards for TB care sustainably. Engaged providers should be updated regularly on STCI and encouraged to follow the standards of care.
- To improve the sustainability of CBNAAT usage, use CBNAAT services offered by the public sector as per the recommendations of the programme as the lowest-cost option for diagnosis by private practitioners. That means supporting specimen transportation to public sector CBNAAT laboratories, or MOUs with the public sector to provide CBNAAT cartridges to private providers for providing free services to patients.
- Improve mechanism for testing of specimens for extra-pulmonary TB. Medical colleges can be involved to provide access to diagnostic service for extra-pulmonary patients.
- Strengthen quality assurance mechanism for sputum smear microscopy where implemented.

For RNTCP

- Explicitly promote and expand implementation of CBNAAT for DST on any TB notification from private providers and also for the multidrug-resistant (MDR) high-risk group. Plan and procure adequate CBNAAT services to account for increased private provider (referral) demand.
- Allocate sufficient resources in the programme for expanding CBNAAT services to be offered either at the public sector delivery points or by private provider service delivery points, through PPP models. Explore the feasibility of implementing contracting or purchasing PPP model for CBNAAT services.
- Incorporate innovations like provider report cards into e-Nikshay to make this routinely available anywhere in the country, so that private providers can benchmark their use of microbiological testing against other providers in their districts and the local public sector performance.

Prescription practices

Observations

Under the intervention, prescriptions of first-line anti-TB drugs of all notified TB patients are captured. This gives an opportunity to understand prescription practices of individual practitioners, which may help to rectify these if required and ensure that standards for TB care are followed. Additionally, prescriptions from practitioners are collected and reviewed for addition of drugs covered over and above those reimbursed under UATBC.

The majority of prescriptions of first-line drugs contain HRZE/HRE as prescribed under STCI, which is in marked contrast to prior observations as reported by Uplekar et al. from Mumbai. It has been observed that practitioners tend to prefer over-treatment than under-treatment. There were instances of treatment for longer duration, both in the intensive phase and overall. It was also reflected in the use of streptomycin injections. Review of prescriptions for drugs given revealed that ~10% of anti TB drug prescriptions also had fluoroquinolones, though these drugs were not reimbursed under the project. In addition, ancillary drugs and nutritional supplements are commonly added. These are also not reimbursed through the project.

Implications and opportunities

In general, the challenge with private qualified providers is not so much with respect to correct prescription, but more to do with keeping the patients on a treatment regime. Under the current TB notification system established for the private sector, there is no scope of knowing prescription practices of private providers even if they notify TB patients. Free drug vouchers under the interventions opened up the opportunity to bring prescriptions on first-line anti-TB drugs given by private practitioners under the surveillance. The system can identify practitioners to work upon for improving prescription practices. A similar opportunity is currently available only if Gazette notification of schedule H1 drugs is effectively executed and information of prescription details is utilized. Since intervention does not provide free second-line drugs, addition of these drugs to drug-sensitive TB patients may still need to be monitored either through regular prescription audit or even from H1 surveillance.

Recommendations

Disseminate educational material and continue re-sensitization on STCI for both active and non-active providers. Compile best practices and clinical cases and provide regular technical and operational updates to providers. Peer learning and support through senior practitioners, CME through IMA, etc. could help in further improving the quality of practices adopted by private practitioners. Regular monitoring of prescription practices through voucher analysis and prescription audit and systematic use of the information gained from such analysis could be used to influence practices of private practitioners. In addition, systematic use of Gazette notification of schedule H1 drugs should be considered to monitor prescription practices of providers with support of Food and Drugs Control Administration (FDCA).

E-voucher, free drugs and reimbursement process

Observations

Overall, the processes followed under the pilot interventions facilitate smooth provision of free medication to TB patients from the private sector. The electronic voucher generation and validation process adopted under the pilot for providing free access to anti-TB drugs takes approximately 2–3 minutes and acceptability of this protocol is fairly high among

doctors and chemists. Patients acknowledged receipt of free first line anti-TB drugs. Chemists are reimbursed complete cost of drugs largely within 7 days of dispensing it to the patients. Reimbursement amount for vouchers are verified and approved by PPIA in Patna and Mumbai while in Mehsana it is done by District TB Officer. The system of providing monthly feedback through monthly provider report card is a good practice observed in Patna.

Incidences of busy phone lines were observed. Frequency of call waiting and abandoned calls was more in peak hours, i.e. 11:00 to 14:00. There is a procedure laid down to call back the providers on subsequent days. However, instances of providers not picking up phone calls from contact centre have been reported. Usually, providers themselves call the contact centre to notify patients later in the day. In Patna, cash incentives seem to work more for the compounders and informal providers rather than physicians. Chemists are maintaining copies of bills and manual records of validated vouchers to keep a check on reimbursement in Mehsana.

Recommendations

Strengthen the capacity of the IT back-end and call centre support to avoid call delays, call drops, follow-up delays, billing errors, wrong entry of addresses of patients, etc. To strengthen call centre operations further, constantly review the work load and develop a dynamic HR plan to offset employee attrition. In addition, training of both contact centre and field staff on confidentiality norms and counselling skills could improve their performance. In Mumbai, transition from manual to e-voucher and e-transfer system should be completed. Monitoring of call centre operations will ensure effective operations and coordination with field officers. Supporting chemists with ICT tools can enrich them with information on drugs dispensed and reimbursement made, which could ease their operations. Providers should be notified of the release of payment automatically. Similarly, ICT tool support in terms of dashboard on adherence and treatment outcome for providers should be considered as part of engagement process.

Public health actions

Observations

Public health actions following TB notification of patients treated in the private sector are provided and documented by the field staff. Different components of public health actions were prioritized by all three sites. For example, Mehsana prioritized diabetes and HIV screening of notified TB patients during the initial home visit, along with chemoprophylaxis for children contacts. Mumbai and Patna prioritized getting DST. Results of the activities are given in the table below.

Table 9: health actions reported by UATBC sites cumulatively till March 2016

Indicators	Patna	Mehsana	Mumbai
No. of TB patients notified since implementation	24 962	4837	23 160
No. of TB patients visited at home	10 433	2627	14 570
No. of household contacts (under 6 years) given chemoprophylaxis	26	110	0
No. of household contacts identified as presumptive	80	224	580
No of household contacts evaluated for diagnosis of TB	N/A	130	321
No. of household contacts diagnosed with TB	N/A	5	41
No. of TB patients offered HIV testing	76	2512	41
No. of TB patients offered DM screening	94	2505	0
Number of notified microbiologically confirmed cases that received a DST	2509	88	6580
Number of cases diagnosed as rifampicin resistant TB	642	16	1921

A major limitation in public health action is the lack of coordinated information to the relevant health staff. For patients residing outside the district, incomplete addresses and contact details, non-consenting patients or providers and paper-based recording (as in Mehsana) are challenges in extending public health action following TB notification. Linkages to rapid molecular diagnostics was the key to achieving high a proportion of DST in Patna and Mumbai, while in Mehsana, non-availability of CBNAAT within districts and poor uptake of sputum microscopy by the providers led to low coverage of DST. Additionally, pre-treatment investigations, further DST and linkage with RNTCP for drug-resistant tuberculosis (DR-TB) services were also offered under the UATBC in Mumbai. This was an attraction to the private physicians and doctors as expressed by practitioners who were interviewed.

Challenges of offering, and more importantly, monitoring public health services following notification are similar to those faced by the public sector earlier during its introduction under the programme. So, the challenge of improving public health action follow up is in both public and private sectors.

Implications and opportunity

Interventions in all sites demonstrated huge potential for possible public health actions among privately treated patients, either through PPIAs or by the RNTCP staff. One of the important uses of information of TB patients notified from the private sector is extending public health services following TB notification. To name a few, these are contact investigation, HIV testing and drug susceptibility testing, which has a role to play both in prevention of disease spread and specialized management of patients. UATBC demonstrated the feasibility of providing public health services following TB notification. Additional manpower would be required to carry out such activities, especially in large urban areas where a large number of TB patients seek care in the private sector. In rural areas, it can be managed by adequate staffing as per the NSP norms (for STS, TB-HV, District Programme Coordinator and PPM Coordinator and by enhancing their capacity.

Additionally, offering access to some of the diagnostic services like CBNAAT increases the coverage of extending such public health services to TB patients. Sustained efforts towards extending the public health services, complete coverage in terms of both patients and services, enhancing capacity of staff and adequate IT support to them for tracking these services over a period of time are required.

Recommendations

For UATBC sites

- Improve coverage and monitoring of public health actions following TB notification with systematic inclusion (during home visit) of (i) contact screening, (ii) HIV screening, and (iii) DST.
- Closer interaction and collaboration should be ensured between the PPIA, contact centre and public sector officials/staff at all levels in order to ensure better coordination in the provision of public health services.
- Integrate with eNikshay for referral and tracking of patients treated in the private sector by leveraging existing transfer feedback mechanism under RNTCP, especially for those patients residing outside the district.

For RNTCP

- Include the standard protocols developed under the project into ICT tools for health workers in order to help organize systematic follow up, streamline multiple registers and records and bring some accountability to coverage for all TB patients.
- Develop linkages with rapid diagnostic tools for DST (like CBNAAT) in order to encourage practitioners to order DST.
- Develop a system of providing feedback to treating physicians for referred DR-TB patients, which will help in increasing confidence of private providers in the public health system.

Treatment adherence and outcomes

Observations

The adherence mechanism broadly used by UATBC for privately treated TB patients has strengthened counselling, drug receipt confirmation, mobile reminders, self-reporting and patient treatment support activities. Support for treatment adherence is extended to patients treated in the private sector through an ICT platform with the support of PPIA and/or RNTCP staff. Generally, patients were sent two messages in a week to remind them for intake of pills. Adherence monitoring was done through weekly phone calls and tracking drug collection by patients (which are usually supposed to be on monthly basis). Field staff (PPIA/RNTCP



staff) visit most patient homes initially at the beginning of treatment. Further follow-up visits are conducted by the field staff to selected patients (prioritized based upon predefined criteria) in Patna and Mumbai and for retrieval actions at all three sites.

A considerable amount of effort and resources were deployed to create an adherence system for privately-notified TB patients. Among patients on private treatment supported by UATBC, most (>80%) agreed to initial home visits. More than 70% patients were given adherence support through this across the three sites. However, regularity of SMSs and phone calls from contact centres were not as per the protocols developed for the project. Frequency of calls and SMSs got reduced from weekly to fortnightly with increased volumes in notification from the private sector in recent months. For those patients who do not have mobile phones, there are challenges as the routine adherence calls in such cases are given to a contact person (family member, neighbour, friend, etc.). Each drug intake is being captured in the system, but this information is suboptimally utilized to track patients and not monitored adequately. Additionally, patients residing outside the districts, incomplete and incorrect addresses and non-participation of a few patients in the adherence monitoring system are challenges. Follow-up of most patients are through clinical and with Chest X-ray. In Patna and Mumbai, sputum microscopy and X-rays are offered free for follow up with negligible uptake.

Treatment outcomes are ensured systematically through the programme interventions for TB patients treated in the private sector. The programme staff contacts patients to get information on treatment outcomes supported by drug voucher refill information. This was never reported to the programme before. Treatment outcomes of TB patients treated in the private sector and notified under the intervention during the one year period from 2Q14 to 1Q15 are given in Table 10.

Table 10: Treatment outcome of TB patients notified under UATBC (from 2Q14 to 1Q15)

Treatment outcomes	Patna		Mehsana		Mumbai	
	Count	Percentage	Count	Percentage	Count	Percentage
Treatment completed	4190	75%	962	72%	2805	73%
Died	172	3%	56	4%	86	2%
Lost to follow up	187	3%	136	10%	341	9%
Change of treatment to Category IV regimen	78	1%	11	1%	159	4%
Not evaluated	963	17%	168	13%	453	12%
Total	5590	100%	1333	100%	3819	100%

To ensure better treatment outcomes, getting information on patients and systematically tracking those residing outside the district is a challenge. A good proportion of patients residing within the district were not evaluated as well. Incomplete and incorrect address, stoppage of treatment due to medical reasons or change in diagnosis are some of the challenges to be overcome in order to ensure better treatment outcomes.

It was noted that successful creation and deployment of an acceptable adherence system has a positive feedback effect of attracting more private notifications. Providers repeatedly

reported that they were bothering to notify cases since patients were now returning to them.
Implications and opportunities

Information on the adherence behaviour of privately treated TB patients is historically unknown. The project intervention has been able to unravel what was not known in the past, i.e. treatment adherence behaviour in the private sector. While doing so, it provided an opportunity to monitor adherence and ascertain treatment outcome.

Under UATBC intervention, it has been shown that TB treatment adherence can be supported and monitored for privately-treated TB patients, facilitated by ICT and escalating alerts to field staff. A relationship built through systematic engagement of providers, offer of subsidized/free diagnosis and offer of free drugs may have played a key role in opening up the opportunity to extend adherence support and follow these patients. However, adherence interventions under the UATBC need to be intensified to ensure standards of care by using some of the newer systems of adherence now available.

Voucher generation during each follow up visit of patients to private providers for drugs will provide an opportunity to record monthly drug intake of patients, and hence duration of treatment of patient. Additionally, tracking of patient for adherence support and regular contact of staff with the patient gives ample opportunity to ensure recording treatment outcomes of TB patients treated in the private sector. This was not known to the public health system before this.

There are still some challenges to overcome such as systematically recording treatment outcomes of a few patients whose diagnosis is changed after notification, treatment stopped due to medical reasons, purchasing drugs outside of voucher system and for those who shifted out of the area or out of reach of voucher system.

Recommendations

For UATBC sites

- Develop a mechanism to provide feedback to treating physicians on follow ups, adherence, referred DR-TB patients and treatment outcomes which will help to positively influence care of patients through private practitioners and take their support in ensuring adherence.
- Systematic engagement of NGOs for patient follow-up implemented in urban areas may be required for Mehsana to augment capacity for patient (home-visit) follow up. Alternative would be to augment tuberculosis health visitors (TBHVs) or use general health staff.
- Adherence system using ICT platform could be strengthened with the use of additional tools that are emerging such as 99 DOTS, Pill box.
- Enhance capacity of call centres to ensure regular reminders and monitoring of adherence. Improve mechanism for drug intake reminders to patients and prompt follow up or priority-based home visit alerts to field staff, in order to strengthen treatment adherence support to patients. Sensitise call centre employees about confidentiality and “patient ears only” approach.

- Efforts need to be enhanced to encourage private practitioners for monitoring of treatment response of microbiologically confirmed TB patients through sputum examination. Concentrated advocacy with practitioners and extending support for providing access and linkages (for specimen transportation) to sputum examination should be considered.
- Build and strengthen a system to address the patients who are “not evaluated” or “lost to follow up” among patients treated in the private sector. Strengthen feedback mechanism (as under the programme), ensure complete and correct address recorded at time of TB notification.

For RNTCP

- Replicate or integrate the best practices of supporting treatment adherence for privately notified TB patients using free drugs, reminders and self-reporting, with augmentation by higher-quality ICT tools not yet used by UATBC.
- Provide ICT tools and system support to field staff for better management of patient information, monitoring and patient tracking in order to strengthen both public health actions following TB notification as well as adherence support to TB patients. Link IT support with E-TB register for STS for better use of information available for action.

Reduction in out-of-pocket expenditure to patients

Observations

Based on the expenditure analysis, an indirect assessment was made on the amount of cost (expenditure) savings for each patient in the project. It was noted that the project has certainly reduced or subsidised the cost of care for patients. The expenditure saved to the patients through provision of free drugs and diagnostics is given in Table 11.

Table 11: Cost saved to patients with free drugs and diagnostics

	Patna	Mehsana	Mumbai
No. of TB patients notified	24 962	4837	23 160
No. of TB patients given free drugs	22 508	4578	17 246
No. of patients months of vouchers reimbursed	96 384	15 822	63 328
Total amount of drugs reimbursed	38 718 623	6 075 324	32 810 000
Average per patient cost of drugs saved to patients	1720	1327	1902
No. of patients received diagnostic services	9044	--	13 887
No. of diagnostic vouchers reimbursed	67 129	--	39 140
Total amount of diagnostic services reimbursed	15 717 300	--	29 530 000
Average per patient cost of diagnostic test saved to patients	1737		2126

It is important to note that out-of-pocket expenses on first-line anti-TB drugs has been eliminated. Additionally, expenditure on account of diagnostic tests, digital chest X-ray, CBNAAT and DSTs was also saved in Patna and Mumbai. Incidence of subsidized cost of doctor consultation was observed at some places. However, patients treated in the private sector continue to incur other expenses such as consultation fee, ancillary drugs, transport, nutritional supplements and additional tests through out-of-pocket. Some of these expenditures may be incurred by even those patients seeking services from the public sector.

Recommendations

Undertake a more elaborate review of the OOPE of beneficiaries both in the public and the private sectors. Use the evidence generated to design a targeted approach to reducing current OOPE. Detailed analysis would help in targeted reduction of OOPE.

Cost implications to programme

Table 12 shows the head-wise cost incurred under the project. In Mehsana, existing RNTCP staff is supporting field activities and diagnostic support is not provided externally. Hence, the cost will be lesser as compared to Mumbai and Patna, where programmatic costs also include staff, PPIA organizational and management support, deployment of dedicated ICT support, diagnostic support in cost of commodities, and incentives (Patna only).

Table12: Actual costs incurred in UATBC sites by category (INR)

Cost head		Patna	Mehsana	Mumbai
Programmatic Costs	Office staff cost	1 043 070	2129.	2 394 615.
	ICT costs	996 227	322 718	1 143 323
	Field staff costs	1 109 470.	0.0	3 156 842
	Incentives cost/ honorarium	465 302.1	21 773.	0.0
	Other costs	168 264.8	92 279	836 640
Commodity Costs	Diagnostic costs	1 810 087.	0.0	4 129 572.
	Treatment costs	3 309 112.	725 793	2 911 145.
Total monthly costs		8 901 534.	1 164 692.	14 572 138.
Number of cases in a month		7752	1373	8414
Average cost per case in a month		1148	848	1732

Definition and calculation of various cost heads are summarized in Annexure 4

Mehsana had both lower programme operation costs and commodity costs as field operations were managed by existing RNTCP staff and there was no diagnostic support given to the patients under the intervention outside RNTCP. Mumbai had more diagnostic service utilization (more CBNAAT tests) compared to Patna which led to higher per patient diagnostic cost. Mumbai also deployed more field staff – separate for provider engagement and for patient management, from the beginning. Moreover, Mumbai had a lower coverage of patients and a higher fixed (programme operations) cost compared to Patna. Further analysis suggested that cost per case can go down with increase in volume of patients through improving coverage.

National scale-up cost projections recognized some economies of scale to be gained, especially in Mumbai and Patna where patient coverage was estimated at roughly one third and half, respectively. Mehsana, which had already achieved coverage of most TB patients, already represented the scale-up cost. Scale-up costs were reflected for two scenarios, nationally and for states. The first scenario represents national scale-up, inclusive of drugs and diagnostic costs. The second scenario represents the state programme budget implication, without drug and diagnostic costs. Estimates on the urban scenario are drawn from implementation of interventions in Mumbai and Patna, i.e. using PPIA and providing free diagnostic services to patients. Estimates on the rural scenario are drawn from Mehsana as implemented, wherein field operations are managed by RNTCP staff and diagnostic support is not considered outside RNTCP which could be more expensive (than what is given in Table 13), if diagnostic CBNAAT were included.

Table 13: Annual cost projections for scale-up of UATBC model

	Population (bn) ¹	Additional CNR ²	Average cost/case at scale (INR)	Annual budget ³ (INR)
National scenario				
Urban	0.3	100	6365–9380	161–235 crores
Rural	0.8	100	4020	221 crores
State scenario				
Urban	0.3	100	2747– 5628	67–134 crores
Rural	0.8	100	1675	93.8 crores

¹ Assuming 2/3rd of the population is reached in both areas

² CNR measured as cases per 100 000 population

³ Assuming 80% treatment completion rate; includes drugs and partial CBNAAT usage in urban areas; no CBNAAT in rural areas

1 crore = 10 million

State-wise projections are shown in the Appendix.

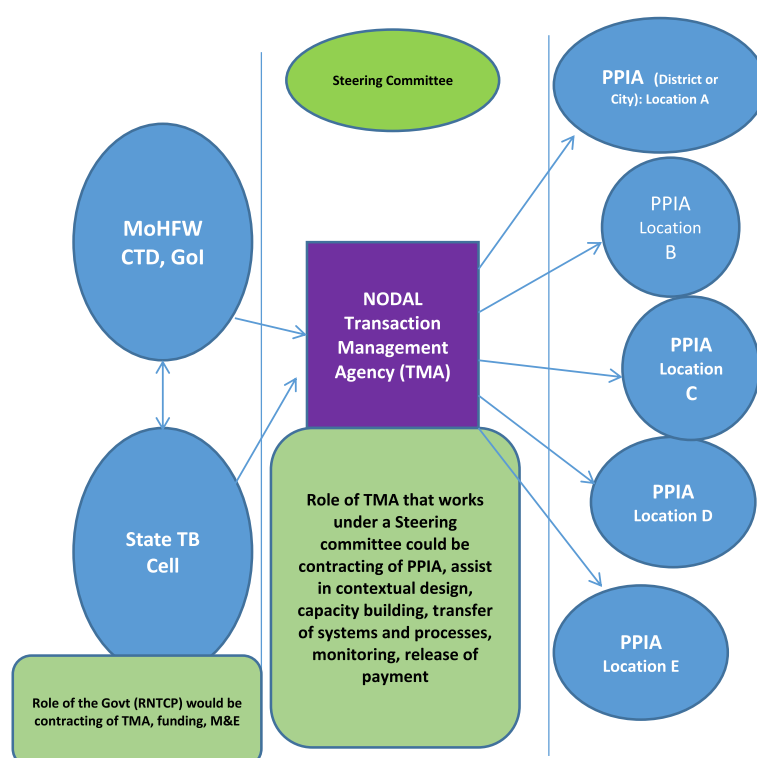
Implications and opportunities

Assessment team clearly identified that the interventions demand additional efforts, additional commodities and additional intervention strategies—firstly, in order to get TB notification at a scale to be effective; and secondly, to ensure standards of care for TB patients seeking care in the private sector. As demonstrated in the intervention, the quantum of TB patients to be offered standard care is more than those reported in the public sector, with almost the same or moderately higher resource spending as compared to current public sector spending. These cost projections based on observed costs at a reasonable scale of intervention suggest that the budget required is similar to that required for public patients, on a per patient and overall programme basis. It is therefore evident that equal or moderately higher resources spent or deployed to scale up the intervention strategy would achieve greater efficiency.

Management and oversight mechanism

The pilots are improving access to diagnostics and drugs and are leading to enhanced care for TB patients seeking services from the private sector. There is substantial increase in TB case notifications from the private sector, which is otherwise outside the national surveillance system and almost unknown to the Programme. The intervention design demonstrated an institutional mechanism for engagement of the private sector with greater efficiency. Although the pilot design still needs strengthening of certain systems and processes, the interventions under the pilots have enormous potential to be scaled up both in urban and rural areas across the country for engaging the private sector more efficiently for TB control. Possible mechanism for managing the scaled-up intervention could be as depicted in Fig. 6.

Figure 6: Schema of institutional mechanism for UATBC interventions



In the proposed model, the Ministry of Health and Family Welfare (MoHFW) and CTD at the Centre provide stewardship to the states through a nodal transaction management agency (TMA). The TMA assists states to design a contextually appropriate strategy for engaging the private sector in TB control, based on the pilot models, adapting best practices, institutional systems and protocols, support mechanisms and for providing guidelines for engaging private practitioners and policy support. The MoHFW and CTD shall pay the TMA for providing technical assistance, capacity building, assistance in contracting of PPIAs in the state (district or city), transferring from the pilot phase to designing appropriate systems, SoPs and institutional mechanism for the PPIAs, etc. The TMAs may also be authorized to supervise and monitor the performance of PPIAs in conjunction with the state/district RNTCP for the release of funds/payment, etc. The MoHFW and CTD may appoint a national steering committee to advise and monitor the TMA. Steering committee can also constantly review the entire mechanism and its impact on surveillance, treatment outcomes, private provider engagement and management of patients seeking care in the private sector. The states will have the option of using the PPIA model or Mehsana model according to their need. However, at any earmarked location only one kind of strategy shall be used. The states can contract the centrally appointed TMA, fund, and carry out monitoring and evaluation activities.

Appendix

State*	Rural pop. (mn)**	Urban pop. (mn)**	Annual budget – total (crores INR)
Uttar Pradesh	155.1	44.5	24.7-33.0
Bihar	92.1	11.7	12.1-14.2
West Bengal	62.2	29.1	11.9-17.3
Maharashtra	61.5	50.8	15.7-25.2
Andhra Pradesh***	56.3	28.4	11.1-16.4
Madhya Pradesh	52.5	20.1	09.3-13.0
Rajasthan	51.5	17.1	08.6-11.8
Karnataka	37.6	23.6	08.3-12.7
Tamil Nadu	37.2	34.9	10.2-16.8
NE States	36.8	8.2	5.4-07.0
Orissa	35.0	7.0	5.0-06.3
Gujarat	34.7	25.7	8.3-13.1
Jharkhand	25.0	7.9	4.1-05.6
Chhattisgarh	19.6	5.9	3.2-04.3
Kerala	17.5	15.9	4.7-07.7
Punjab	17.3	10.4	3.7-05.7
Haryana	16.5	8.8	3.4-05.0
Jammu & Kashmir	9.1	3.4	1.6-02.2

Annexures

Annexure 1 – Team members

Sr.	Name	Designation	Place
1.	Professor A. Venkatraman	Professor, Faculty of Management Studies, Delhi University, New Delhi	Patna
2.	Dr Raghuram Rao	DADG, CTD, New Delhi	Patna
3.	Dr Vineet Chadha	Head, Epidemiology & Research Division, National TB Institute, Bengaluru	Patna
4.	Dr Beena Thomas	Social Scientist, National Institute of Research in TB, Chennai	Patna
5.	Dr Nilesh Gawde	Faculty, School of Health System Studies, TISS, Mumbai	Patna
6.	Dr Shibu Balakrishnan	Consultant, Kerala	Patna
7.	Dr Mannan Shamim	Consultant, CTD, New Delhi	Patna
8.	Mr Arindam Moitra	Consultant, CTD, New Delhi	Patna
9.	Ms Shikha Dhawan	Consultant, CTD, New Delhi	Patna
10.	Dr Rohit Sarin	Director, NITRD, New Delhi	Mehsana
11.	Dr Devesh Gupta	ADDG, CTD, New Delhi	Mehsana
12.	Dr A Sreenivas	NPO-TB, WHO India	Mehsana
13.	Dr Bhavin Vadera	Consultant, CTD, New Delhi	Mehsana
14.	Dr Amar Shah	Consultant, CTD, New Delhi	Mehsana
15.	Dr Ashwani Khanna	State TB Officer, Delhi	Mumbai
16.	Dr V.G. Rao	Scientist G, NIRTH (ICMR) Jabalpur, Madhya Pradesh	Mumbai
17.	Dr P.P. Mandal	Medical Officer TB, WHO South East Asia Regional Office, New Delhi	Mumbai
18.	Dr Manoj Toshniwal	Independent Consultant (Public Health), Akola, Maharashtra	Mumbai
19.	Dr Malik Parmar	National Professional Officer – DR-TB, WHO Country Office for India, New Delhi	Mumbai
20.	Dr Kiran Rade	Consultant, CTD, New Delhi	Mumbai
21.	Dr Mohan Kohli	Consultant, CTD, New Delhi	Mumbai
22.	Dr Jyoti Jaju	Consultant, CTD, New Delhi	Mumbai

Annexure 2 – Infrastructure of Contact Centre

IT Hardware, equipment and components put in at contact centre include:

- Call audit software
- Dialler application (to support relevant screen pop-ups on the agent's screen on the basis of CLI, automatic number identification (ANI), dialled number identification sequence (DNIS))
- Internal IT helpdesk ticket generation software
- Computer systems
- Avaya system for Inbound calls
- Outbound system
- Agent monitoring system for outbound – for team lead, QA and manager
- Headset for outbound and inbound each
- ACD system for call distribution. The ACD system provides for the following features:
 - Call distribution to a given agent in the Contact Centre
 - Intelligent call routing and skill-based routing
 - Queuing facility
 - Recorded announcement features
 - Unique identification of each agent
 - Call routing to agent on “longest idle basis”
- Interactive Voice Response System (IVRS): The IVRS menu shall be played in Hindi/Marathi/Gujarati and additional regional languages (as and when added)
- Report logger system to monitor
 - number of calls taken by the system daily, weekly, fortnightly, monthly, quarterly, half yearly, annually
 - summary of calls by query, service, time period
 - average time spent by callers in IVR tree before being transferred to agent
 - call handling time on IVRS for various queries, services
 - percentage of calls abandoned in the IVR along with reason
 - percentage of calls disconnected along with reason
 - call level wise abandon percentage
 - peak call volumes by time intervals, date, etc.
- SMS portal to send out UATBC process-related alerts to relevant stakeholders.

Annexure 3 – Glossary of terms used in the engagement process

Mapped	Mapped is defined as the identification of the private provider universe within a geographical intervention.
Targeted	Targeted is defined as identification of providers as potential targets for being engaged in the UATBC programme. This includes providers with a presumptive TB case load.
Engaged	Engaged is defined as participation in a sensitisation/training and consent to participate in the UATBC programme.
Active	Active is defined as at least one activity performed in UATBC in the reporting period including suspect registration, notification, generation of diagnostic/drug vouchers, or validation of vouchers.

Annexure 4 – Summary of various cost heads and calculation

Cost head	Nature of cost	Definition	Calculation
Office staff cost	Fixed	Salary and other expenses of PPIA and CBO office staff	Salary and other expenses of PPIA and CBO office staff
Other costs	Fixed	Includes costs for provider training, lab operations, IEC activities and administrative costs like facilities cost, audit costs, printing costs	Calculated as per month average from actual data on these headers
ICT costs	Variable	Includes costs of call centre seats, telecom, operational costs, SMS costs and IT resource costs	Used activity-based costing to project the monthly call duration/SMSs required to cater to the projected number of patients, and derived the number of seats required using data on available minutes per call centre agent
Field staff cost	Variable	Salary of field officers, CBO field staff and SCT agents	Used activity-based costing to project the monthly field staff time required to cater to the projected number of patients and providers. Derived the number of field officers using data on capacity of a single field officer
Incentives cost	Variable	Diagnostic and treatment incentives	Total number of incentives of different kind is projected depending upon the projected number of engaged providers. Unit cost per incentive is used to compute the total incentive amount
Diagnostic cost	Variable	Costs for subsidizing X-ray, GX, sputum test	Calculated from the current diagnostic activity level of providers – number of CXRs and GXs ordered per provider and projections about provider coverage in future
Treatment cost	Variable	Cost and/or subsidy for treatment drugs	Computed using the projected number of patients on treatment in a month and unit cost of drug subsidy given to each patient. Includes estimate of average duration of treatment



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