

Every provider counts: effect of a comprehensive public-private mix approach for TB control in a large metropolitan area in India

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SUMMARY

SETTING: Mumbai, India.

OBJECTIVES: To assess impact on case notification and treatment outcome of a public-private mix approach for tuberculosis (TB) control involving private providers, non-governmental organisations (NGOs), and public providers not previously involved in the Revised National TB Control Programme (RNTCP).

METHODS: Under the stewardship of the RNTCP, providers were allocated different roles in referral, diagnosis, treatment initiation, directly observed treatment (DOT) provision, training and supervision. Referral forms were introduced and RNTCP registers were adapted to enable monitoring of case notification by different providers and cohort analysis disaggregated by provider type.

RESULTS: A fraction of all non-RNTCP providers had

become actively involved by the end of 2003. These providers contributed 2145 new smear-positive cases in 2003, an increment of 40% above the 5397 cases detected in RNTCP facilities. The treatment success rate for new smear-positive cohorts for 2002 was 85% in RNTCP facilities, 81% in private clinics, 88% in medical colleges, 91% in NGOs and 73% in the TB hospital (where the death rate was 16%).

CONCLUSION: Active involvement of some key public and private providers can increase case notification substantially while maintaining acceptable treatment outcomes. The impact can be expected to be even larger when all health providers have been involved.

KEY WORDS: tuberculosis; public-private mix; metropolitan TB control; case detection

IN 2002, 69% of the world's population was covered by DOTS services, while only 37% of estimated new smear-positive cases were notified and registered in DOTS programmes.¹ This is only half way to the 70% case detection target for 2005.² There is currently a global quest for innovative approaches to improve case detection of tuberculosis (TB). One way forward is to actively involve all available health care providers in DOTS expansion.³

In many countries the existing public-private mix (PPM) of health care providers has not been optimally utilised for DOTS expansion. The for-profit private sector is often poorly regulated and controlled by the health authorities, and is therefore perceived as being out of reach of public health programme planning and implementation. However, it seems that many public sector providers are also out of reach of public health programme implementation, often due to a lack of coordination and joint central planning between different Ministry of Health (MoH) departments as well as between the MoH and other ministries responsible for health care provision in a variety of

sectors, such as the prison system, the armed forces, educational systems and employee health insurance schemes.³

In large cities this situation is particularly complicated due to the multiplicity of private and public providers and of authorities. TB control coordination between city, provincial and national administrations poses complex problems related to the hierarchy of bureaucracies and degree of autonomy. The problem of too many authorities and providers is compounded by a matching multiplicity of user groups with different TB service needs: daily wage earners, slum dwellers, day migrants and drug users. As a consequence, there is often poor access to a wide range of weak services available in metropolitan areas.⁴

This is the situation also in India, where the Revised National TB Control Programme (RNTCP) was implemented in 1992 and two thirds of the country was covered by 2003.⁵ In facilities implementing the RNTCP, the treatment success rate has been consistently above 80%. However, the case detection rate was only 31% in 2002.¹ A contributing factor for low

case detection rates under DOTS is that many patients are treated in health facilities that are not part of the RNTCP.

The for-profit private health care sector treats a large proportion of TB cases in India.^{6,7} Several projects have piloted approaches linking private providers (PPs) to the RNTCP to improve case detection under DOTS and to improve TB treatment quality in the private sector. Based on documented successes in improving case detection and treatment quality through such approaches,^{8,9} the RNTCP has developed strategies for broader involvement of both the private for-profit sector and non-governmental organisations (NGOs) in TB control.^{10,11}

Many public health care providers also diagnose and treat TB in an unstandardised manner outside the RNTCP, without notifying cases. The RNTCP recently developed strategies to involve all relevant public health care providers in TB control. Few data are available on the effectiveness of such approaches in India and elsewhere. The current study assesses a strategy to involve all relevant public and private health care providers in a large metropolitan area in India.

METHODS

Study setting

Mumbai has a population of 12 million, of which half live in slums.¹² RNTCP implementation started in 1992 and reached 100% geographical coverage in 1999. The RNTCP is implemented through the Mumbai District Tuberculosis Control Society (MDTCS). Members are representatives of all stakeholders involved in TB control, such as medical colleges, the TB Hospital, Mumbai District AIDS Control Society, private chest consultants, NGOs and the Maharashtra Anti-Tuberculosis Association. The city is divided into 6 administrative zones and 24 administrative wards. The RNTCP is implemented through 22 TB units, 112 microscopy centres and 676 treatment centres. In 2001, the RNTCP facilities in Mumbai had a cure rate of 83%. The case notification rate was 42 new smear-positive cases per 100 000 population in 2001, i.e., 56% of estimated incidence based on the national annual risk of tuberculosis infection (ARTI).¹³

Public providers controlled by local government include four medical colleges, 21 secondary care hospitals, one TB hospital, 26 maternity homes, 163 municipal dispensaries and 176 urban health posts. Many other health institutions are run by the State Government, Central Government, Railways, Employees State Insurance Scheme (ESIS), Port Trust and defence establishments.

There are about 50 large private hospitals, 2000 nursing homes, and 8000–10 000 individual PPs practicing allopathic (modern), Ayurvedic, homeopathic and Unani systems of medicine. The TB case load is

high, and TB management practices have previously been very poor.^{6,14,15}

The numerous local NGOs in Mumbai play a role in providing services for underprivileged TB patients in the slums and integration into targeted communities. With the introduction of the RNTCP, many NGOs have shifted their role towards social activities.¹⁶

The intervention

The intervention was aimed at involving all relevant providers in the RNTCP by identifying suitable roles in DOTS delivery for various providers (Table 1). MDTCS/RNTCP was responsible for setting standards of care and for overall coordination, supervision, quality control, monitoring and evaluation. Development of tools for improving the referral and information systems, sensitisation of providers, training and field supervision was carried out in collaboration with three NGOs: Médecins Sans Frontières (MSF), Universal Care Initiative for TB Control (UCITC) and Inter Aide. Funding was from the RNTCP, with support from the World Health Organization (WHO), while the NGOs contributed staff time. All providers were instructed to follow the RNTCP guidelines. Drugs were delivered by the RNTCP to facilities acting as directly observed treatment (DOT) providers (DOT was provided thrice weekly in health care facilities). No financial incentives were used. Non-financial incentives for PPs included access to continuing medical education free of charge, and access to free sputum microscopy and quality-assured anti-tuberculosis drugs for TB patients.

Involving additional public providers

After initial reluctance to implement the RNTCP, the four medical colleges in Mumbai agreed to open RNTCP out-patient departments run by chest physicians working in close liaison with all relevant hospital departments. A core committee was established under the chairmanship of the Dean in each medical

Table 1 Role division of different provider types in Mumbai PPM initiative for improved DOTS implementation

	RNTCP	Public hospitals	NGOs	Private practitioners
Financing, drug supply, surveillance	X			
Training, supervision, monitoring	X		X	
Referral of suspects	X	X	X	X
Diagnosis	X	X	X	
Treatment initiation	X	X		
DOT provision	X	X	X	X
Defaulter retrieval	X			

PPM = public-private mix; RNTCP = Revised National Tuberculosis Control Programme; NGO = non-governmental organisation; DOT = directly observed treatment.

college for coordination and effective implementation of RNTCP. The 1000-bed TB hospital was involved only after purchase of RNTCP drugs was stopped by the intervention of a higher authority. The patients diagnosed at this hospital were given RNTCP drugs for in-patient treatment and were then referred to the nearest DOT centre. ESIS hospital involvement started at the end of 2003 after the intervention of the secretary of State Ministry of Labour, followed by regular meetings with the ESIS director. Also at the end of 2003, the Railway Ministry issued directives to implement the RNTCP in all its railway hospitals and dispensaries.

Involving the private sector

Involvement of PPs started in zones 1 and 4 of the six administrative zones in 2002. PPs were trained and instructed to refer TB suspects to public microscopy centres and act as DOT providers for patients living close to the PP clinic. Collaboration with PPs was developed in line with RNTCP guidelines for PP involvement,¹¹ which gave PPs free access to TB diagnosis and drugs provided by the RNTCP.

PPs were mapped using lists produced by government health posts and the local branch of the Indian Medical Association (IMA) in zone 1 and by door-to-door census in zone 4. In zone 1, PPs were reached using a group approach. In collaboration with the IMA, continuing medical education sessions were organised to inform PPs about the initiative. In zone 4, project staff used a one-to-one approach to explain the initiative and invite them to join the project. By the third quarter of 2003, 785 of 1689 mapped PPs (46%) had become actively involved in zone 4, compared to 13% of PPs in zone 1. The difference was believed to be due to differences in sensitisation approaches. Given the greater participation in zone 4, from the third quarter of 2003 the one-to-one approach was also applied throughout zone 1, and the proportion of listed PPs actively participating increased to 24% that quarter.

None of the small private hospitals/nursing homes are yet linked to the RNTCP. Thus private sector involvement is still limited to a fraction of private facilities in two of the six zones.

Involving NGOs

The RNTCP now has formal collaboration with 45 partner NGOs, some of which have helped to create an NGO forum, which serves as a platform for discussion and debate of problems and for identifying ways of working with the RNTCP. They also help to support high-risk TB patients such as pavement dwellers, drug addicts and human immunodeficiency virus (HIV) positive patients by arranging DOT providers, providing nutritional and financial support and counselling the patients.

Data collection and analysis of referrals and case notification

Standard RNTCP recording and reporting forms and routines were introduced in all participating PPM DOTS health facilities. The standard laboratory register was used to note the source of referral of patients attending the microscopy centres.¹⁷ Referral letters and forms to be used when providing feedback to the referring facility were designed. The type of DOT provider was noted in the TB register. These adaptations allowed enumeration of referrals from different provider types and disaggregation of treatment outcome for place of treatment. Historical data on RNTCP case notification from 1999 onwards were combined with prospective data from the start of the intervention; a time series of case notification was created to assess whether the PPM DOTS initiative was associated with a shift in the case notification trend. This analysis was done for the whole of Mumbai, as the catchment population for many of the targeted providers was not limited to the administrative zones, and the presence of large institutions in some zones, such as the medical colleges, the TB hospital and large NGOs, made the zones non-comparable. It was thus not possible to establish suitable non-intervention control zones. Not all patients were treated in the place from which they had been referred, and the number of patients evaluated in the cohort analysis is therefore considerably smaller than the number of patients referred for each non-RNTCP provider category.

RESULTS

Besides the medical colleges, the TB hospital and the NGOs, by the fourth quarter of 2003 a total of 1018 PPs in zones 1 and 4 had become actively involved by referring suspects, while 187 had acted as DOT providers. Of the PPs involved, 479 practised allopathic and 539 other medical systems.

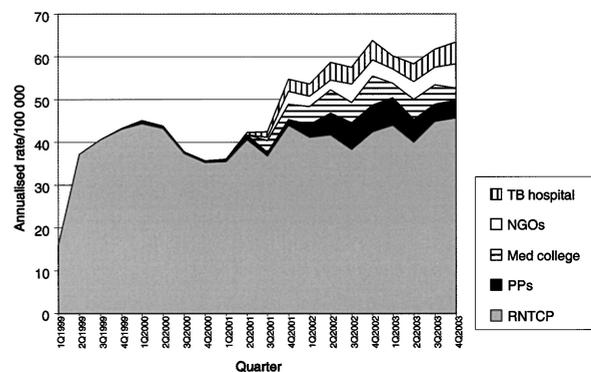


Figure 1 New smear-positive case detection under DOTS by referring/diagnosing provider type, Mumbai 1999–2003. TB = tuberculosis; DOT = directly observed treatment; NGO = non-governmental organisation; Med = medical; PP = private provider; RNTCP = Revised National Tuberculosis Control Programme.

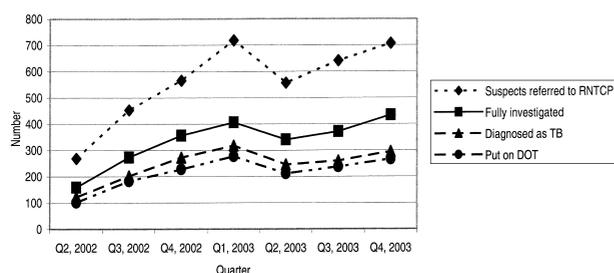


Figure 2 Trend of PP referrals in zones 1 and 4. PP = private provider; RNTCP = Revised National Tuberculosis Control Programme; TB = tuberculosis; DOT = directly observed treatment; Q = quarter.

In 2003, 24 620 TB cases were registered under DOTS in Mumbai, of which 7542 (31%) were new smear-positive cases. Of the new smear-positive cases, 5397 (72%) were self referred to the RNTCP, 509 (6.7%) were detected in the TB hospital and 485 (6.4%) in medical colleges, while PPs and NGOs had referred respectively 614 (8.1%) and 537 (7.1%) cases. Of the total 1733 cases diagnosed through referral by PPs in 2003, 614 (35%) were new smear-positive cases.

There was an increase in the case notification trend after the intervention (Figure 1). While quarterly notified cases recorded as self-referrals to RNTCP facilities remained relatively stable after the intervention, the number of cases notified by the different PPM DOTS providers increased gradually, and their total contribution corresponded roughly to the increase in case notification in Mumbai.

The number of suspects referred by PPs in zones 1 and 4 increased over time (Figure 2). The proportion of those referred who were fully investigated and diagnosed as TB was stable, at around 60% and 40%, respectively, throughout the study period. Almost all of those diagnosed cases were put on DOT. The number of new smear-positive cases diagnosed through PP referral was higher in zone 4 than in zone 1 (Figure 3). Trend of change in case detection for all TB cases was similar to the trend for new smear-positive cases, and

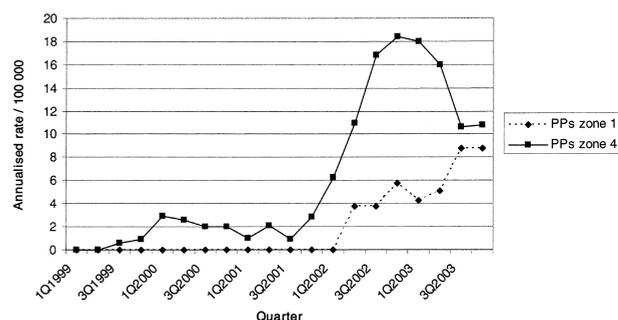


Figure 3 Trend of case detection of new smear-positive cases through referral from PPs in zones 1 and 4. PP = private provider; Q = quarter.

this was the case both in the whole of Mumbai as well as in zones 1 and 4 (data not shown).

Standard RNTCP regimens were used for all registered cases regardless of DOT provider. The treatment outcome for cases receiving DOT by different provider type is shown in Table 2.

DISCUSSION

The involvement of a wide range of health care providers in different DOTS tasks was associated with an increase in case notification, with maintained treatment success. Already in 2001, the case notification in Mumbai was 42 new smear-positive cases per 100 000, considerably higher than the average for India in 2001 (25/100 000). The rate was 56% of national estimated incidence of new smear-positive TB cases in 2001 (75/100 000). In 2003, the case notification for new smear-positive cases under DOTS increased to 61/100 000, or 81% of the national estimated incidence. This indicates that the case detection rate can be increased beyond the 70% target using the PPM approach. However, different incidence estimates for India have been reported in recent years. In 2001, whereas RNTCP cited 75/100 000, the WHO cited 122/100 000;¹⁸ in 2002, however, the WHO changed to 75/100 000.¹ Recent tuberculin surveys have never-

Table 2 Treatment outcome for new smear-positive cases in 2002 cohorts, by provider type*

	RNTCP n (%)	PPs n (%)	Medical colleges n (%)	NGOs n (%)	TB hospital n (%)
Cured	6067 (85)	181 (61)	43 (88)	249 (91)	131 (73)
Treatment completed	0 (0)	58 (20)	0 (0)	0 (0)	0 (0)
Died	352 (5)	7 (2)	0 (0)	4 (1)	29 (16)
Failure	307 (4)	15 (5)	5 (10)	10 (4)	7 (4)
Defaulter	390 (5)	35 (12)	1 (2)	12 (4)	13 (7)
Transfer out	1 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total registrations	7117 (100)	296 (100)	49 (100)	275 (100)	180 (100)

* Only cases that received treatment from PPs, NGOs, medical colleges and TB hospital are included in the respective cohorts. Cases referred by these providers but who received treatment in RNTCP facilities are included in the RNTCP cohort.

RNTCP = Revised National Tuberculosis Control Programme; PP = private provider; NGO = non-governmental organisation; TB = tuberculosis.

theless indicated an ARTI in urban areas in Western India of about 2.4%,¹⁹ which roughly corresponds to an incidence of smear-positive TB of 120/100 000.²⁰ Based on this estimate, the current case detection rate would be only about 50%. To close this gap further, continued efforts are needed to involve all health care providers in RNTCP implementation.

In 2003, case notification of new smear-positive cases due to referral or diagnosis through non-RNTCP facilities represented an increment of about 40% above the cases detected through self-referral in RNTCP facilities. This is no proof that the increase in the general trend can be attributed to the intervention, as this study did not control for trend in areas with no intervention. Nevertheless, the data strongly suggest that a broad approach to utilising the existing PPM of health care delivery is an effective way to increase case notification. This is in agreement with evaluations of several other PPM initiatives, which have shown substantial increases in TB case notification after applying similar strategies to involve for-profit and not-for-profit PPs.²¹⁻²³ Although these results are encouraging, further studies are needed, especially on the impact of comprehensive approaches to involve all public and private providers in DOTS delivery. There is also a need to further improve the use of sputum smear microscopy for treatment evaluation of sputum-positive cases and to reduce default rates among patients treated by PPs.

It should be emphasised that the intervention in Mumbai has not yet peaked and numerous health care providers are not yet involved: many large and small private hospitals are yet to be approached; public sector providers under ESIS and the Ministry of Railways have only just become involved, and their contribution is yet to be measured; and only a fraction of all PPs in two of six zones have been involved. Furthermore, about 40% of all TB suspects referred by PPs were not fully investigated. In a small follow-up survey with household interviews of 397 such patients (unpublished data), 138 (35%) could not be traced; among the 259 traced patients, the most common primary reasons for not completing the diagnostic process was that the patient felt better or did not feel a need for the suggested service (178/259, 68.7%), or that the patient had returned home to a village outside Mumbai (53/259, 20.5%). Only 17/259 (6.5%) said that they preferred non-DOTS treatment with prescribed drugs in the private sector. None mentioned financial barrier as a main reason. These findings suggest that improved information for patients at the time of referral, and improved referral chains with providers outside Mumbai, could reduce this type of default.

Some lessons on how to initiate collaboration with private and public providers might be identified in this study. It seems important to involve all relevant stakeholders in the planning of TB control. In Mumbai, this was done through the MDTCS to create an ap-

propriate collaborative environment and a sense of ownership among public and private health providers and departments. Previous research has shown that it is essential to create a good collaborative environment and invest sufficient time for local stakeholder dialogue.²⁴ However, to obtain clear commitment from some public sector providers outside the MOH, who were initially very reluctant to collaborate, clear instructions and regulatory interventions were needed from the central level. For example, involvement of medical colleges required intervention from the Department of Medical Education and Research; the TB hospital became fully involved only when procurement of anti-tuberculosis drugs by the TB hospital was replaced by drug distribution through the RNTCP; involvement of the ESIS started on order of the Ministry of Labour; and the Railway health services became involved after instruction from the Ministry of Railways.

Given the common initial distrust between PPs and NTPs, involvement of PPs needs communication to build trust.^{22,24} The public sector must be able to demonstrate high technical and service quality to attract the interest of both PPs and their patients.²²⁻²⁴ Likewise, the PPs must demonstrate that they are capable of managing TB according to DOTS principles to gain trust among public sector staff. These challenges were encountered in Mumbai, and considerable time and resources were invested in building trust between the RNTCP and PPs, facilitated by NGOs acting as intermediaries. Other roles of NGOs included providing specific input in their area of expertise, such as information and communication, counselling and motivation of patients. For PPs, the extent of interaction at the individual level might be more important than in the public sector: a one-to-one approach for initial sensitisation was associated with higher participation rate.

These observations indicate a need for strong coordination at central level for the involvement of all relevant public sector providers, while a direct, individualised approach may be more important for involving the private sector, which is often heterogeneous, less organised than the public sector and consists of independently operating PPs.

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R É S U M É

CONTEXTE : Mumbai, Inde.

OBJECTIFS : Evaluer l'impact d'une approche combinée publique-privée sur la déclaration des cas et les résultats du traitement lorsque la lutte antituberculeuse implique des pourvoyeurs de soins privés, des organisations non gouvernementales (ONG) et des pourvoyeurs publics qui n'avaient pas été impliqués antérieurement dans le Programme National Révisé de Lutte Contre la Tuberculose (RNTCP).
METHODES : Sous la conduite du RNTCP, les pourvoyeurs se sont vu attribuer des rôles différents dans le transfert, le diagnostic, la mise en route du traitement, l'exécution du DOTS, la formation et la supervision. Les formulaires de référence ont été introduits et les registres du RNTCP ont été adaptés pour permettre la surveillance de la déclaration des cas par différents pourvoyeurs ainsi que l'analyse des cohortes stratifiées selon le type de pourvoyeur.

RESULTATS : Une fraction de l'ensemble des pourvoyeurs hors RNTCP a été impliquée activement à la fin de 2003. Ces pourvoyeurs ont contribué à 2.145 nouveaux cas à bacilloscopie positive en 2003, une augmentation de 40% en plus des 5.397 cas détectés dans les services du RNTCP. Le taux de succès du traitement pour les cohortes de nouveaux cas à bacilloscopie positive en 2002 a été de 85% dans les services RNTCP, de 81% dans les cliniques privées, de 88% dans les écoles de médecine, de 91% dans les ONG et de 73% à l'hôpital TB (où le taux de mortalité a été de 16%).

CONCLUSION : Une implication active de certains pourvoyeurs-clé du domaine public et privé peut augmenter de manière substantielle la déclaration des cas tout en maintenant des résultats acceptables du traitement. On peut s'attendre à un impact encore plus grand lorsque la totalité des pourvoyeurs de santé aura été impliquée.

R E S U M E N

MARCO DE REFERENCIA : Mumbai, India.

OBJETIVOS : Evaluar el impacto que tendría sobre la declaración de los casos y el desenlace del tratamiento, la aplicación de un programa mixto de los sectores público y privado en la lucha contra la tuberculosis (TB), que involucra proveedores privados de servicios, organiza-

ciones no gubernamentales (ONG) y proveedores públicos de servicios sanitarios, no implicados previamente en el Programa Nacional Revisado de Control de la Tuberculosis (RNTCP).

MÉTODOS : Bajo la responsabilidad del RNTCP, se asignaron diferentes funciones a los proveedores de asistencia

sanitaria, en la remisión, el diagnóstico, el comienzo del tratamiento, el suministro del DOT, el adiestramiento y la supervisión. Se introdujeron los formularios de remisión y se adaptaron los registros del RNTCP para permitir la vigilancia de la notificación de los casos de los diferentes proveedores y el análisis de cohortes, discriminadas según el tipo de proveedor.

RESULTADOS: Al final de 2003, una parte de los proveedores externos al RNTCP estaba vinculada activamente con el programa. Estos proveedores contribuyeron con 2145 casos nuevos con baciloscopia positiva en 2003, un incremento del 40%, además de los 5397 casos

detectados en los centros del RNTCP. En 2002, la tasa de éxito del tratamiento en las cohortes de casos nuevos con baciloscopia positiva fue del 85% en los centros del RNTCP, del 81% en los consultorios privados, del 88% en hospitales universitarios, del 91% en las ONG y del 73% en el hospital de TB (cuya tasa de mortalidad fue del 16%).

CONCLUSIÓN: La vinculación activa de proveedores pertinentes del sector público y privado puede aumentar considerablemente la declaración de casos, conservando resultados aceptables del tratamiento. El impacto puede ser aún mayor cuando se vincule la totalidad de los proveedores de atención sanitaria.
