

Improving tuberculosis control through public-private collaboration in India: literature review

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Abstract

Objective To review the characteristics of public-private mix projects in India and their effect on case notification and treatment outcomes for tuberculosis.

Design Literature review.

Data sources Review of surveillance records from Indian tuberculosis programme project, evaluation reports, and medical literature for public-private mix projects in India.

Data extraction Project characteristics, tuberculosis case notification of new patients with sputum smear results positive for acid fast bacilli, and treatment outcome.

Data synthesis Of 24 identified public-private mix projects, data were available from 14 (58%), involving private practitioners, corporations, and non-governmental organisations. In all reviewed projects, the public sector tuberculosis programme provided training and supervision of private providers. Among the five projects with available data on historical controls, case notification rates were higher after implementation of a public-private mix project. Among seven projects involving private practitioners, 2796 of 12 147 (23%) new patients positive for acid fast bacilli were attributed to private providers. Corporate based and non-governmental organisations served as the main source for tuberculosis programme services in seven project areas, detecting 9967 new patients positive for acid fast bacilli. In nine of 12 projects with data on treatment outcomes, private providers exceeded the programme target of 85% treatment success for new patients positive for acid fast bacilli.

Conclusions Public-private mix activities were associated with increased case notification, while maintaining acceptable treatment outcomes. Collaborations between public and private providers of health care hold considerable potential to improve tuberculosis control in India.

Introduction

In India, an estimated 1.79 million new cases of tuberculosis and 352 000 tuberculosis related deaths occurred in 2003, representing one fifth of the global burden of incident cases of tuberculosis and mortality.¹ The Indian Revised National Tuberculosis Control Programme began nationwide implementation of the World Health Organization's global tuberculosis control strategy (DOTS) in 1998 and has since expanded rapidly. Almost half of patients with tuberculosis in India may initially seek help from private health care, where diagnosis, treatment, and reporting practices often do not meet national or international standards for tuberculosis.²⁻⁴ Subsequent delays in diagnosis and inadequate treatment may impair efforts for tuberculosis control in India. Collaborations

between the public and private health sectors, or public-private mix, may be an important solution.

Public-private mix has been defined by WHO as strategies that link all healthcare entities within the private and public sectors (including health providers in other governmental ministries) to national tuberculosis programmes for expansion of DOTS activities.⁵ We describe the effect of a series of pilot public-private mix projects in India on case notification of tuberculosis and treatment outcomes and discuss the potential role of public-private mix in improving tuberculosis control in India.

Methods

The Indian Revised National Tuberculosis Control Programme developed guidelines to help local programmes structure collaborations with private healthcare providers and non-governmental organisations.^{6,7} These guidelines offered plans for the diverse community of private providers, with options to participate in the referral, diagnosis, or treatment of patients with tuberculosis.

For our review we included all collaborations between the Indian Revised National Tuberculosis Control Programme and private health providers listed in the programme's surveillance records. To allow focus on private practitioners and non-governmental organisations, we excluded collaborations with medical colleges and government health facilities outside the authority of the Indian ministry of health.⁸ We reviewed only collaborations with non-governmental organisations in which tuberculosis care was delivered to an area with a population of at least 500 000.

For each project the evaluation period was the time frame for which case notification or treatment data were available. These data were collected for each project site in quarterly (three month) increments from the Indian tuberculosis programme surveillance records and WHO public-private mix project evaluation reports. If available we also collected project area case notification data from the Indian tuberculosis programme before the introduction of a public-private mix project. We limited data collection to new cases whose sputum tested positive for acid fast bacilli.

We defined a private sector notified patient as a patient diagnosed as having tuberculosis or referred by the private health sector who was subsequently recorded (registered) by the Indian tuberculosis programme as a tuberculosis case. All other patients registered as having tuberculosis were defined as



Projects are listed on bmj.com



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New case notifications of tuberculosis on basis of sputum smears positive for acid fast bacilli among public-private mix pilot projects in India, 1999-2004

Public-private mix project (state)	Before public-private mix project		After public-private mix project			Public-private mix contribution to case notification in project areas	
	Evaluation period	Mean (95% CI) tuberculosis case notification rate*	Evaluation period	Mean (95% CI) tuberculosis case notification rate*	% Change in mean case notification rate	Total No of new case notifications	No (%) of new case notifications from private sector
Private practitioners							
Delhi LRS (New Delhi)	Jan 1999 to Dec 2000	51.3 (34.8 to 64.2)	Jan 2001 to Mar 2002	101.6 (83.0 to 120)	98.0	127	28 (22)
Kannur (Kerala)	Jan 2000 to Jun 2001	28.3 (25.0 to 31.7)	July 2001 to Dec 2002	33.8 (30.5 to 37.1)	19.4	1225	307 (25)
Kollam (Kerala)	Jul 2001 to Jun 2002	36.6 (31.0 to 42.2)	July 2002 to Dec 2003	41.0 (36.4 to 45.5)	11.9	1588	264 (17)
Mumbai (Maharashtra)	Jan 1999 to Jun 2001	29.7 (25.3 to 34.1)	July 2001 to Dec 2003	54.3 (50.1 to 58.5)	82.7	3544	910 (26)
Thane Municipal (Maharashtra)	Jan to Dec 2001	50.5 (38.3 to 62.7)	Jan 2002 to Mar 2003	64.7 (53.9 to 75.6)	28.0	971	61 (6)
Thane Rural (Maharashtra)		NA†	Jul 2001 to Jun 2003	41.6 (31.0 to 46.0)	NA	3530	64 (2)
Corporate and non-governmental organisation							
Mahavir (Andhra Pradesh)		NA†	Jan 1999 to Dec 2003	46.5 (41.8 to 51.2)	NA	1162	1162
Tea Estates (Assam and West Bengal)		NA†	Jan 2001 to Jun 2003	66.6 (58.0 to 72.7)	NA	3327	3327
SHIS (West Bengal)		NA†	Jul 2003 to Mar 2004	31.6 (24.5 to 38.8)	NA	285	285
Falah-e-Am (Uttar Pradesh)		NA†	Jan 2001 to Jun 2003	101.6 (79.1 to 124.1)	NA	1270	1270
NDTB (New Delhi)		NA†	Jan 1999 to Dec 2003	105.8 (88.0 to 123.6)	NA	1058	1058
RK Mission (New Delhi)		NA†	Jan 1999 to Dec 2003	80.6 (73.5 to 87.7)	NA	2417	2417
Leprosy Rural Relief (Tamil Nadu)		NA†	Oct 2000 to Dec 2003	42.1 (34.1 to 50.2)	NA	722	722
St Mary's Leprosy (Tamil Nadu)		NA†	Jul 2000 to Dec 2003	44.7 (41.2 to 54.5)	NA	888	888

NA=not available. LRS=Lala Ram Sarup Institute of Tuberculosis and Respiratory Diseases; SHIS=Southern Health Improvement Samity; NDTB=New Delhi Tuberculosis Centre; RK=Ramakrishnan.

*Mean annual case notification rate over evaluation period.

†Tuberculosis surveillance data not available before public-private mix evaluation period, as local Indian tuberculosis programme not yet implemented.

public sector notified patients. We defined private provider administered DOT as the administration of directly observed antituberculosis treatment to a patient registered as having tuberculosis by a private health provider. Public sector administered DOT was defined as the administration of directly observed antituberculosis treatment to a patient registered as having tuberculosis by the public sector tuberculosis programme. A treatment success was defined as a new patient with sputum positive for acid fast bacilli who achieved cure or completed treatment.⁹ For each public-private mix project we calculated quarterly case notification rates. Population estimates were taken from the 2001 census or local government estimates.

Results

Twenty four public-private mix projects met our inclusion criteria (see [bmj.com](#)). We were able to collect data from 14 (58%) of these projects (see [bmj.com](#)). In all projects, the Indian tuberculosis programme provided training for private providers to synchronise laboratory, diagnostic, and treatment practices with national guidelines. Costs of training were uniformly borne by local or state tuberculosis programmes. The public-private mix projects used a variety of methods to link the Indian tuberculosis programme and private providers. Projects in Kannur and Kollam (Kerala) provided training and support for private laboratories and encouraged referral of patients with sputum smears positive for acid fast bacilli to public sector facilities for treatment.¹⁰ Other projects relied on private providers to refer patients with suspected tuberculosis to public sector facilities for smear microscopy. In 10 (71%) of the 14 reviewed projects, private laboratories provided free smear microscopy.

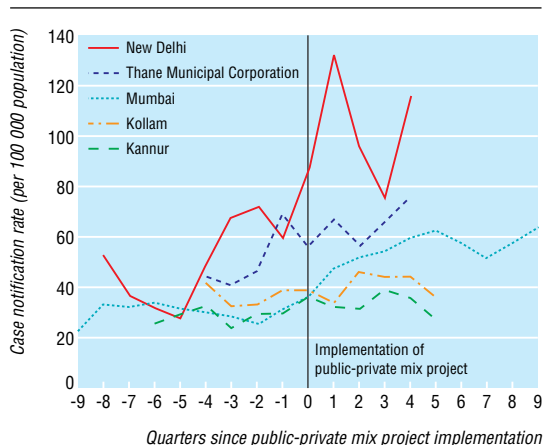
Professional societies, such as the Indian Medical Association, were also essential partners in bringing together public and private providers.

Although patients were generally referred to the public sector for treatment, private providers sometimes acted as treatment providers. Treatment providers were responsible for administering directly observed treatment regimens (intermittent dosing, three times a week) supplied by the Indian tuberculosis programme.

The six public-private mix projects that primarily involved private practitioners were evaluated for a median of 18 months (range 15-30 months). During this time, 10 985 new cases of tuberculosis on the basis of sputum smears positive for acid fast bacilli were reported in the project areas, of which 1631 (15%) were from the private sector (table). This represented 2-26% of case notifications for each of those individual projects. In each of the five projects involving private practitioners with data available from before and after implementation of a public-private mix project, the average quarterly number of positive case notifications increased by between 12% and 98% after initiation of the project (figure).

The eight public-private mix projects that involved collaborating partners from the corporate sector or non-governmental organisations were evaluated for a median of 30 months (range 9-48 months). During this time 11 129 new cases positive for acid fast bacilli were notified in these areas. Since public-private mix projects were the sole source of Indian tuberculosis programme services here, all case notifications were attributed to the private sector.

In nine (75%) of 12 public-private mix projects with available data on treatment outcome, private provider administered directly observed treatment met or exceeded the Indian tuberculosis programme target of



Tuberculosis case notification rate before and after implementation of public-private mix project, for collaborations with private practitioners in India, 1999-2004. Projects represented are those with data available before implementation of public-private mix project

85% treatment success (see bmj.com). In two projects where treatment outcomes of public sector administered and private provider administered directly observed treatment were compared, no significant differences were found.^{10 11}

Discussion

Collaboration between the Indian Revised National Tuberculosis Control Programme and private practitioners in India improved the case notification of tuberculosis while maintaining good treatment outcomes. Compared with historical surveillance data from the same project areas in a limited number of projects involving private practitioners, higher mean case notification rates were observed after implementation of the public-private mix project. Furthermore, limited data from non-governmental organisations and private industry medical services showed their ability to work with the Indian tuberculosis control programme and successfully diagnose and treat large numbers of patients with tuberculosis. A strong public sector tuberculosis control programme proved critical for provision of necessary advocacy, training, and supervision.

Concomitant efforts by the Indian tuberculosis programme to increase case detection through educa-

tional campaigns and improvement of public sector clinical services likely also played a part. Indeed, national case notification rates from areas without public-private mix projects increased over the same general period as the evaluated projects. Even accounting for this limitation, to the Indian tuberculosis programme the benefits of public-private mix have proved sufficiently substantive to warrant inclusion into the overall Indian tuberculosis control strategy.

Local tuberculosis programmes made substantial investments in the training and supervision of private providers. These investments may be justified, as recent economic analyses of public-private mix projects in Hyderabad and New Delhi support the perception that public-private mix is cost effective.¹² Furthermore, public-private mix reduces treatment costs for patients, as drugs are provided free of charge by the Indian tuberculosis programme. Programmes should, however, avoid diverting resources from public sector tuberculosis control for public-private mix, as any erosion in effectiveness from public sector tuberculosis control might neutralise the positive benefits of public-private mix activities.

As a result of India's active engagement with these public-private mix projects, the scene is set for a broad scale-up of public-private mix into routine practice for tuberculosis programmes. Policies and operational guidelines are in place to guide local programmes and private providers in implementing such public-private mix activities. At the central government level, the Indian tuberculosis programme has pursued and formalised agreements with other large government institutions. The programme has also sponsored national workshops and developed specific procedures for collaboration with medical colleges, which treat large numbers of patients with tuberculosis and play a crucial part in the management of complicated cases.⁸ Consensus recommendations have been developed for the management of tuberculosis in adults and children in partnership with professional societies, medical colleges, and international experts.^{13 14} Urban areas tend to have large numbers of private providers and hence are being targeted for intensified public-private mix scale-up. Plans are under way for expansion and replication of strategies associated with sustained success.

The diverse public-private mix projects we describe highlight the feasibility and challenges of implementing public-private collaboration in tuberculosis control. Similarly, these public-private mix concepts could be applied to other diseases of public health importance, including HIV and malaria, which increasingly require linkages between governments, private providers, and community based organisations. The lessons of Indian public-private mix projects have been and continue to be instrumental in shaping the global agenda for public-private mix activities in DOTS expansion, and may accelerate the achievement of goals for global tuberculosis control.

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What is already known on this topic

India has almost one fifth of the world's burden of tuberculosis, and as many as half of patients with tuberculosis see private providers first

Collaboration between public tuberculosis programmes and private healthcare sectors is an important strategy to ensure equitable access to quality tuberculosis diagnosis, treatment, and care

What this study adds

In a series of pilot projects in India, tuberculosis case notification improved after implementation of public-private collaboration

The Indian tuberculosis programme is scaling up efforts to collaborate with private providers and improve access to directly observed treatment, particularly in urban areas

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Acceptability of low molecular weight heparin thromboprophylaxis for inpatients receiving palliative care: qualitative study

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Abstract

Objective To find out what inpatients with advanced cancer who are receiving palliative care think about the effect of thromboprophylaxis on overall quality of life.

Design Qualitative study using audiotaping of semistructured interviews.

Setting Regional cancer centre in Wales.

Participants 28 inpatients with advanced metastatic cancer receiving palliative care and low molecular weight heparin.

Main outcome measures Recurring themes on the effect of thromboprophylaxis on overall quality of life.

Results Major emerging themes showed that patients knew about the risks of venous thromboembolism and the purpose of treatment with heparin. Media coverage had raised awareness about venous thromboembolism, and many had previous experience of thromboprophylaxis. All found low molecular weight heparin an acceptable intervention, and many said that it improved their quality of life by giving them a feeling of safety and reassurance. Antiembolic stockings were considered uncomfortable and had a negative impact on quality of life. Patients were concerned that because they had advanced disease they might not be eligible for thromboprophylaxis.

Conclusion Low molecular weight heparin is acceptable to inpatients with advanced cancer receiving palliative care and has a positive impact on overall quality of life. Antiembolic stockings are an unacceptable intervention in this patient group. Guidelines on thromboprophylaxis are urgently needed for palliative care inpatient units and hospices.

Introduction

Up to 52% of patients in specialist palliative care units may have venous thromboembolism,¹ and one in seven inpatients with cancer dies of pulmonary embolism.² A consensus statement by the American College of Chest Physicians recommends that hospitalised patients with cancer receive low molecular weight heparin.³ However, there are no national thromboprophylaxis guidelines within the United Kingdom,⁴ and less than 10% of palliative care units have guidelines. There are concerns that daily injections of low molecular weight heparin may cause unnecessary distress.⁵ We surveyed inpatients who were receiving palliative care to find out their views on thromboprophylaxis and whether low molecular weight heparin was an acceptable intervention.

Methods

Sample selection

We recruited patients from the specialist palliative care unit within the regional cancer centre, which had established thromboprophylaxis guidelines. Inclusion criteria were: metastatic cancer or primary brain tumour with no curative treatment available; evidence within medical notes that the incurable nature of the disease has been discussed with the patient; the patient had received low molecular weight heparin thromboprophylaxis for at least five consecutive days.



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