

# Public–private mix for DOTS implementation: what makes it work?

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**Objective** To compare processes and outcomes of four public–private mix (PPM) projects on DOTS implementation for tuberculosis (TB) control in New Delhi, India; Ho Chi Minh City, Viet Nam; Nairobi, Kenya; and Pune, India.

**Methods** Cross-project analysis of secondary data from separate project evaluations was used. Differences among PPM project sites in impact on TB control (change in case detection, treatment outcomes and equity in access) were correlated with differences in chosen intervention strategies and structural conditions.

**Findings** The analysis suggests that an effective intervention package should include the following provider-side components: (1) orienting private providers (PPs) and the staff of the national TB programme (NTP); (2) improving the referral and information system through simple practical tools; (3) the NTP adequately supervising and monitoring PPs; and (4) the NTP providing free anti-TB drugs to patients treated in the private sector.

**Conclusion** Getting such an intervention package to work requires that the NTP be strongly committed to supporting, supervising and evaluating PPM projects. Further, using a local nongovernmental organization or a medical association as an intermediary may facilitate collaboration. Investing time and effort to ensure that sufficient dialogue takes place among all stakeholders is important to help build trust and achieve a high level of agreement.

**Keywords** Tuberculosis Pulmonary/drug therapy; Antitubercular agents/supply and distribution; Private sector/utilization; Public sector; Directly observed therapy/utilization; National health programs/organization and administration; Health plan implementation; Intersectoral cooperation; Outcome and process assessment (Health care); Comparative study; India; Kenya; Viet Nam (*source: MeSH, NLM*).

**Mots clés** Tuberculose pulmonaire/chimiothérapie; Antituberculeux/ressources et distribution; Secteur privé/utilisation; Secteur public; Thérapie sous observation directe/utilisation; Programme national santé/organisation et administration; Mise en œuvre plan sanitaire; Coopération intersectorielle; Evaluation résultats et méthodes (Soins); Etude comparative; Inde; Kenya; Viet Nam (*source: MeSH, INSERM*).

**Palabras clave** Tuberculosis pulmonar/quimioterapia; Agentes antituberculosos/provisión y distribución; Sector privado/utilización; Sector público; Terapia por observación directa/utilización; Programas nacionales de salud/organización y administración; Implementación de plan de salud; Cooperación intersectorial; Evaluación de procesos y resultados (Atención de salud); Estudio comparativo; India; Kenya; Viet Nam (*fuentes: DeCS, BIREME*).

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## Introduction

Government-run health-care services in low-income countries have been modestly successful in providing equitable access to high-quality care for diseases of public health importance. In many low-income countries, much of the population, across all socioeconomic strata, turns to individual or institutional private health-care providers (PPs). PPs outnumber public health-care providers in some countries and often offer better geographical

access and more personalized care than the public facilities. This has led to a growing interest in understanding how PPs could be effectively involved in improving the outreach of public health programmes (1–7).

However, the clinical management practices of PPs are often inadequate. PPs have been shown to prescribe inappropriate treatment for diseases such as tuberculosis (TB) (8, 9), malaria (10, 11) and sexually transmitted diseases (12, 13), misuse antibiotics (14) and rarely monitor the effects of treatment

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or maintain records (4, 5). A second reason for growing interest in PPs is the need to address the potential negative impact of inadequate management practices such as the development of antibiotic resistance caused by the irrational use of antibiotics and the high costs of substandard care for poor people.

Evidence of successful approaches to involving PPs in public health programmes is growing (7). Suggested approaches include a range of strategies focusing on demand, on supply and on policy-makers (3, 6, 7). Some evidence points to the need to use context-specific multifaceted interventions (3, 15).

TB control is one of the many public health challenges for which innovative approaches to public-private partnership are being sought (5). In 2000, DOTS programmes detected less than 30% of the estimated new TB cases (16). Recent predictions indicate that the global TB control target of 70% case detection by 2005 (17) is unlikely to be achieved unless innovative approaches for increasing case detection are identified and implemented.

Meaningfully involving PPs in TB control would be useful for two strategic reasons: to improve the uneven TB management practices of PPs and to improve people's access to good TB care in settings where PPs offer better geographical coverage. Formally involving PPs in implementing DOTS has been piloted recently in several settings under the guidance of the Stop TB Department of WHO. This has been done within the recently developed framework for public-private mix (PPM) in TB control (5). The present study compared four such PPM projects. The objectives were to compare the processes and outcomes of the four PPM project sites, to correlate differences among sites with the intervention strategies chosen and the structural conditions and to identify the factors that make PPM work.

## Methods

Four PPM projects were set up for DOTS implementation in New Delhi, India; Ho Chi Minh City, Viet Nam; Nairobi, Kenya; and Pune, India. All projects were launched in early 2001 and evaluated within a joint framework developed by the TB Strategy and Operations team of the Stop TB Department of WHO with the aim of enabling cross-project analysis. Evaluation was performed by external and independent resource people appointed by WHO in collaboration with academic institutions that had been involved in designing and implementing the PPM in the respective settings. One-year evaluation reports were prepared between May and September 2002 (18–21). These reports served as data sources for the present analysis. Scientific articles based on the separate projects have previously been published (22–24).

Data for the original evaluation were obtained through upgraded information systems within each PPM project. The information systems were based on specifically designed forms for referrals, treatment cards and upgraded reporting forms and registers. In addition, questionnaires to providers and patients were used. Qualitative analyses based on data from interviews with key informants and written project documentation complemented the quantitative analysis (18–24).

As a first step of the cross-project analysis, the impact of TB control was compared between the projects. TB control impact was measured through indicators of case detection, treatment outcome and equity in access (Table 1). Equity in access was defined as equal access to treatment regardless of financial resources. Next, PPM performance was measured through indicators of PPM implementation processes and the quality of care

within the respective PPM (Table 1). Finally, the variation in TB control impact and PPM performance across projects was correlated with differences in structural conditions (Table 2) and differences in operational intervention strategies for PPM (Table 3) to identify possible relationships. Qualitative analysis was applied to identify plausible explanations for the variation in PPM performance and impact across projects.

## Results

### PPM settings and target groups

The PPM projects were all launched in low-income settings with a high TB burden and a large private health-care sector with weak referral and notification links with the public sector. All settings had public sector DOTS programmes in operation with cure rates close to the WHO target of 85% and estimated case detection rates of 55–70%. The Pune PPM project was based in a rural area; all others were in cities.

In Ho Chi Minh City, the project was implemented in 2 of the 22 districts, with a total project population of about 300 000. Private physicians and pharmacies were targeted in these districts. A group of TB specialists who catered to patients from all over the city was also targeted. In New Delhi, private nursing homes in two areas with a population of about 1.1 million were targeted. In Pune, allopathic and non-allopathic PPs from one rural TB unit covering about 500 000 people were targeted. In Nairobi, chest specialists who catered to patients from all parts of the city were targeted. All projects involved only a fraction of the PPs in the respective PPM project areas.

### Structural conditions

Table 2 shows the core structural differences between the projects.

No new legislation or formal policy on the involvement of PPs in TB control was introduced in any project. The regulatory context was similar across the settings. No laws prohibited PPs from treating TB or private pharmacies from selling anti-TB drugs. TB notification was not mandatory in any setting. General policies on regulating and monitoring PP practices were similarly weak in all settings.

The government stewardship role varied. In Ho Chi Minh City and New Delhi, the national TB programme (NTP) had a clear role in initiating, steering and controlling the PPM. In Delhi, the Ministry of Health also financed all activities, whereas external research funds financed the programme in Ho Chi Minh City. The project in Ho Chi Minh City started as a research activity; in New Delhi, the government took the first initiative and the research components were added to the project later. In the Nairobi project, the NTP initiated the project but used the platform of a nongovernmental organization (NGO) — the Kenya Association for Prevention of Tuberculosis and Lung Diseases (KAPTLD) — to implement the PPM project. Project funding was limited and consisted mainly of drugs supplied by a donor agency. In Pune, a research institution planned and implemented the project. Although this was done in collaboration with the NTP staff, the project did not become clearly anchored in the public sector, which was demonstrated by some public sector managers hindering project implementation.

The operational responsibilities for PPM also differed among projects. In Ho Chi Minh City, the NTP had all operational responsibilities of training PPs, supervision, quality control and monitoring. In New Delhi, the Delhi Medical Association

Table 1. Public-private mix performance and impact on tuberculosis (TB) control (data collected during the 12 months after implementation)

	New Delhi	Ho Chi Minh City	Nairobi	Pune
<b>Impact on TB control</b>				
No. of TB cases (all types/new sputum-positive) registered in the public-private mix, treated by private providers or referred to the national TB programme	612/168	569/255	173/61	51/22
Change in case detection, 2000–01 <sup>a</sup>	+36%	+18%	+61 cases	+22 cases
Treatment success (new sputum-positive cases)	81% <sup>b</sup>	50%	79% <sup>b</sup>	Not available
Equity in access to quality treatment	Yes	No	No	Yes
<b>Public-private mix performance</b>				
Scale and momentum of activities	Many patients; stakeholders active; supervision intense	Many patients; stakeholders rather active; supervision frequent but not corrective	No. of patients not large; stakeholders willing; supervision weak	Few patients; stakeholders willing; supervision weak
No. of actively involved private providers	Physicians from 18 participating nursing homes	41 chest physicians, 55 general practitioners and 58 pharmacies	5 chest physicians	30 allopathic and non-allopathic physicians
Use of sputum microscopy for diagnosis and evaluation <sup>b</sup>	Always	Mostly	Always	Mostly
Use of national TB programme treatment regimen for recruited patients <sup>b</sup>	Always	Sometimes	Always	Always
Use of directly observed treatment <sup>b</sup>	Yes	No	Yes <sup>c</sup>	Yes
Defaulter tracing	Done	No	Done	Done

<sup>a</sup> Relative change in case detection of new smear-positive cases. Public-private mix cases and national TB programme cases combined in public-private mix project areas and controlled for trend in non-public-private mix areas in New Delhi and Ho Chi Minh City. No data from control areas were available from Nairobi and Pune; the change corresponds to the increased number of public-private mix cases in public-private mix areas in 2001 compared with 2000.

<sup>b</sup> For project patients opting for directly observed treatment by private provider with subsidized or free drugs.

<sup>c</sup> Household directly observed treatment.

(DMA) performed these functions, and the NTP conducted overall supervision and quality control of the DMA. In Nairobi, KAPTLD was responsible for project operations. In Pune, the research institution had the central role both in initiating and conducting activities in the project.

The duration and intensity of dialogue between stakeholders before and during the project varied. In New Delhi, the dialogue between NTP at the state and district level and the private sector was intense, complex and lasted for about 18 months before the project was launched. DMA is a strong body representing the interests of private allopathic practitioners in New Delhi. Their input and suggestions were seriously considered in the project development process. In Ho Chi Minh City, there were attempts to bring PPs into the dialogue early and allow their input into the development process. However, the participation and contribution of PPs was weak. A problem was the lack of a clear private sector counterpart for the dialogue, as no professional association represented PPs in Viet Nam. In Pune, the research institutions tried to institute a dialogue with the higher NTP management for support to make the PPM more sustainable, but there were few signs of a true joint development process. In Nairobi, a former NTP manager took the initial steps. Support for the PPM idea was limited within the NTP, however, which contributed to the decision to use the “neutral

ground” of KAPTLD as a platform for the project. PPs were invited to participate in the PPM in finalizing its structure.

### Intervention packages

Table 3 shows the intervention components at each site. Educational activities for PPs were similar across projects and strongly emphasized adopting WHO-recommended diagnostic and case management principles. In all four settings, the intervention package included sensitization and training sessions in which the NTP case management guidelines were presented and discussed with PPs.

Simple forms for referral, individual patient records and reporting forms were introduced in all projects to improve the information systems and the system for referring suspected cases and cases. This component was perceived as crucial in all projects to strengthen diagnostic procedures, to effectively transfer information between providers and to enable the treatment of individual patients and the project as a whole to be monitored.

In all projects, PPs could either treat patients themselves or refer them to the NTP. All projects introduced supervision and quality control at various levels of case management by PPs.

Written consent for participation from PPs was obtained in Pune only, where this was not to be considered a binding contract. PPs in Ho Chi Minh City had direct financial incentives for detected and successfully treated cases.

In New Delhi and Pune, the NTP provided drug boxes, each containing a full course for one patient, to PPs, who dispensed them to patients free of charge. This was contingent on the use of standardized regimens and directly observed treatment. In Nairobi, PPs had access to subsidized drugs for patients who agreed to receive a standardized regimen and directly observed treatment. These patients had to pay in advance the full cost of drugs, at about 30% of the retail price in private pharmacies. In Ho Chi Minh City, the NTP provided no drugs, and PPs sold or prescribed anti-TB drugs.

### Impact on TB control and the performance of PPM

Table 1 shows the variation in the impact on TB control and PPM performance across projects. PPM implementation in New Delhi and Ho Chi Minh City was associated with increased case detection in the project areas. No data were available for control areas in Nairobi and Pune, and controlled change in case detection could therefore not be estimated.

Treatment success for new smear-positive cases treated by PPs was close to WHO targets and as good as in the NTP in New Delhi and Nairobi, whereas treatment outcomes were poor in Ho Chi Minh City. In Pune, only three patients had been evaluated at the one-year evaluation, and all three were successfully treated.

With regard to equity in access, the New Delhi project made quality treatment by PPs available to people with middle and low income by dispensing free drugs. In Ho Chi Minh City and Nairobi, patients had to pay for drugs. In Ho Chi Minh City, the monthly drug cost varied between US\$ 12 and US\$ 33; the low-income patients normally could only afford this for a short period. In Nairobi, treatment was only accessible to those who could prepay US\$ 60–67, which excluded poor people.

## Discussion

### Interpretation of differences across projects

The sites differed in important ways in structural conditions and the processes of PPM. These differences mainly concerned the level of government commitment and the nature of dialogue and partnership building between the stakeholders involved.

Only in the Delhi project did the government directly take the first initiative. With the initiative came funding commitment as well as direct guidance on the conditions for PP involvement. The Delhi project was the most successful in contributing to three central objectives of TB control: high treatment success, high case detection and equity in access. No other project was successful in all these respects or had government commitment to the same extent.

Strong government stewardship functions mean an opportunity to manage PPs and align their practices to public health programmes. However, a top-down strategy may fail if the interests of the PPs are not considered in planning and implementing PPM. This could especially occur in settings such as those in this study in which general private health care regulation is weak, the private sector is strong, the public sector is generally weak and demand for private health care is high. The process of developing a common platform for the projects was difficult at all sites, and conflicts between PPs, NTP and intermediary organizations were so severe at times that several of the projects risked failing even before starting. This reflects the common situation of distrust between PPs and government sector and also the mutual lack of experience in intersectoral collaboration.

In the New Delhi project, stakeholders conducted active dialogue during the 18 months before the project was launched and throughout the project. The positive impact on TB control in New Delhi would probably have been difficult to achieve without spending time and effort resolving conflicts. The fact that the DMA had operational responsibility and interacted with individual PPs probably facilitated this public–private interaction. The New Delhi project thus presents an interesting combination of collaboration between a strong professional association and a committed government sector. This combination was not present in any other project. One key to success could be involving strong stakeholders in the PPM development process while acknowledging potential conflicts between these stakeholders and investing time in resolving them through active dialogue.

All four PPM projects used a common set of basic intervention components, including training, strengthened referral and information systems and strengthened supervision and monitoring. The similarities in these approaches across project sites made it impossible to analyse the impact of these factors on PPM performance and outcome in this study. Nevertheless, the experiences of applying these common-sense approaches were positive at all sites, and they are believed to be fundamental components. Differences across projects concerned mainly the use of free drugs and direct and indirect financial incentives.

In Ho Chi Minh City, patients directly paid the prescribing physician for the full cost of drugs. The default rate exceeded 40%, with the main reason for defaulting, as reported by patients, being financial constraints. In Nairobi, the treatment outcome was acceptable although the drugs were not free of charge. This probably resulted from prepayment, which led to the selection of patients who could afford a full course of treatment and also served as a motivating factor for patients to complete treatment. However, the prepayment scheme excluded poor people. In New Delhi, the distribution of drugs from the

Table 2. Structural public–private mix conditions

	Delhi	Ho Chi Minh City	Nairobi	Pune
New legislation	No	No	No	No
Active support by high-level government officials	Yes	Yes	No	No
Government financing	Yes	No	No	No
Dialogue between stakeholders	Intense	Yes	Yes	Yes
Responsibility for operations	Local medical association	National tuberculosis programme	Lung health nongovernmental organization	Research institution

Table 3. Operational intervention packages

	New Delhi	Ho Chi Minh City	Nairobi	Pune
Improving referral and information systems through simple tools	Yes	Yes	Yes	Yes
Educating and orienting private providers	Yes	Yes	Yes	Yes
Sensitizing staff of the national tuberculosis programme	Yes	Yes	No	Yes
Supervising and monitoring private providers	Yes	Yes	Yes	Yes
Using free drugs	Yes <sup>a</sup>	No	No	Yes <sup>a</sup>
Prepayment of drug costs	No	No	Yes <sup>a</sup>	No
Financial incentives to private providers	No	Yes	No	No

<sup>a</sup> For directly observed therapy patients only.

NTP to PPs for dispensing free of charge to patients probably positively influenced both the completion of treatment and poor people's access to treatment.

Further, the NTP used the distribution of drugs free of user charges as leverage over PPs in New Delhi and Pune, by making drug distribution contingent on adopting DOTS principles. Free drugs could also be seen as an indirect financial incentive for PPs that could contribute to their willingness to participate. Some participating PPs reported that the opportunity to provide some subsidized services for low-income patient groups was a business advantage, since it improved their reputation in the community and thereby increased attendance. However, several private TB specialists in Ho Chi Minh City did not share this opinion; drug sales were a main source of their income and therefore they perceived free TB drugs as a financial threat. This was one reason why free NTP drugs were not used in Ho Chi Minh City. PPs reported that access to diagnostic facilities, educational activities and supervision were other potentially important incentives for participation. Direct financial incentives were used in Ho Chi Minh City only and were not associated with improved diagnosis or treatment or perceived as important incentives by PPs themselves.

### Possible policy implications

Experience from these four PPM project sites shows that working collaboration can be established with PPs in low-income countries with a high TB burden. PPs can contribute to improving case detection, achieving acceptable treatment results and providing affordable treatment of high quality also to poor people. Several possible success factors have been identified. However, this analysis is based on a small number of projects and on evaluation conducted only one year after project initiation. Sustainability issues need to be studied. Further, no project involved a clear demand-side intervention (7). The potential role of demand-side interventions in combination with provider-side interventions was thus not considered. The cost-effectiveness of PPM DOTS is currently being evaluated. However, based on the data at hand, we recommend considering the following potential success factors when planning PPM for improved TB control.

### Structure and process

- Government commitment to PPM is essential. The NTP needs to develop clear stewardship functions for PPM projects. The government should finance PPM operations, including drug costs and cost for staff for supervision, monitoring and evaluation activities.

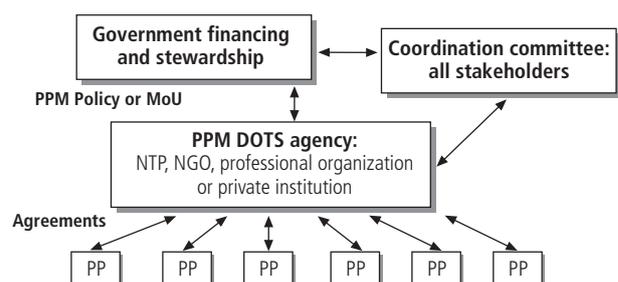
- Time should be invested for dialogue between all stakeholders to build trust and achieve a high level of agreement on common goals for PPM. When conflicts of interest exist, they need to be identified early and discussed openly. Using an NGO or a medical association as a "neutral ground" may facilitate dialogue and collaboration, especially when there is initial distrust between NTP and PPs.

### Intervention package

- Training is crucial; assuring that NTP staff are sensitized to the PPM philosophy is as important as sensitizing PPs to the DOTS strategy.
- Improving referral and information systems through simple practical tools is an essential strategy both to effectively implement the PPM and to enable evaluation of the PPM process and outcome. Based on the experience of the four PPM projects, WHO has developed guidelines on the use of such tools (25).
- PPs need to be adequately supervised and monitored, and the NTP should ultimately be responsible for this.
- Providing drugs free of charge to patients improves treatment outcome, promotes equity and is a tool for managing PPs through formal or informal drugs-for-performance contracts.
- Prepayment by patients is an alternative to free drugs that may yield good treatment outcomes but is not accessible to poor people.

A generic PPM DOTS model is emerging from the four projects (Fig. 1) (25). This model emphasizes the need for government stewardship. It also indicates that either a public or private institution can have operational responsibility and subcontract individual PPs. All PPs can potentially be involved; their specific

Fig. 1. Generic public-private mix DOTS model



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contributions to PPM projects need to be tailored to their level of competence, to people's health-care preferences and to the local health-care context.

The findings in this study are in agreement with Brugha & Zwi's (3) outline of possible effective components of context-specific multifaceted interventions for involving PPs in public health activities. Our analysis suggests that the core generic model outlined above needs to be adapted to local conditions in close dialogue and collaboration with PPs and other relevant stakeholders. Similar experiences have been reported from attempts to work with PPs to improve malaria control (15). The finding that the use of an intermediary organization such as an NGO or a medical association may facilitate collaboration between NTP and PPs is in agreement with the conclusions of an evaluation of a PPM project in Kathmandu Valley (26).

## Conclusion

Once sufficient government stewardship functions are in place, there is room for openness towards the use of PPs for the delivery of public health interventions (27). However, successful PPM

DOTS does not mean privatizing TB control. On the contrary, strengthened government stewardship with public financing of drugs and adequate monitoring and quality control of PPs are means of partly de-privatizing the private sector. ■

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**Conflicts of interest:** none declared.

## Résumé

### Partenariat public-privé pour la mise en œuvre de la stratégie DOTS : quels sont les facteurs de succès ?

**Objectif** Comparer les processus de développement et de réalisation et les résultats de quatre projets de partenariat public-privé pour la mise en œuvre de la stratégie DOTS de lutte contre la tuberculose à New Delhi (Inde), Ho Chi Minh-Ville (Viet Nam), Nairobi (Kenya) et Pune (Inde).

**Méthodes** Une analyse globale des données secondaires issues de l'évaluation séparée des quatre projets a été effectuée. Les différences entre les sites des projets au niveau de l'impact sur la lutte contre la tuberculose (détection des cas, issue du traitement et égalité d'accès) ont été corrélées avec les différences concernant les stratégies d'intervention choisies et le contexte général du projet.

**Résultats** D'après les résultats de l'analyse, une intervention efficace devrait comprendre les éléments suivants en ce qui concerne les prestataires de soins : 1) orientation des prestataires privés et du personnel du programme national de lutte contre

la tuberculose ; 2) amélioration du système d'orientation et d'information des patients au moyen d'outils simples ; 3) supervision adéquate des prestataires privés par le programme national de lutte contre la tuberculose ; 4) distribution gratuite de médicaments antituberculeux par le programme national de lutte contre la tuberculose aux patients du secteur privé.

**Conclusion** Pour qu'une intervention de ce type fonctionne, il faut que le programme national de lutte contre la tuberculose s'engage avec force en faveur du soutien, de la supervision et de l'évaluation des projets de partenariat public-privé. Le recours à une organisation non gouvernementale ou à une association médicale comme intermédiaire pourrait en outre faciliter la collaboration. Il importe d'investir du temps et des efforts pour que s'établisse un dialogue suffisant entre l'ensemble des partenaires afin de bâtir des relations de confiance et d'atteindre un niveau élevé de consensus.

## Resumen

### Acción publicoprivada en la aplicación de la DOTS: claves de su eficacia

**Objetivo** Comparar los procesos y resultados de cuatro proyectos publicoprivados (PP) de aplicación de la DOTS contra la tuberculosis (TB) llevados a cabo en Nueva Delhi (India), Ciudad Ho Chi Minh (Viet Nam), Nairobi (Kenya) y Pune (India).

**Métodos** Se hizo un análisis global de los datos secundarios aportados por las evaluaciones individuales de los proyectos. Las diferencias entre los sitios de los proyectos PP en cuanto a su impacto en el control de la tuberculosis (cambios en la detección de casos, los resultados terapéuticos y la equidad en el acceso) se correlacionaron con las diferencias observadas en cuanto a las estrategias de intervención elegidas y las condiciones estructurales.

**Resultados** El análisis realizado lleva a pensar que, para ser eficaz, un paquete de intervención debe incluir los siguientes componentes en lo que atañe al proveedor: (1) orientación de los

proveedores privados (PPri) y del personal del programa nacional contra la tuberculosis (PNT); (2) mejora del sistema de derivación e información mediante instrumentos prácticos sencillos; (3) supervisión y monitoreo adecuados de los PPri por parte del PNT; y (4) suministro de medicamentos antituberculosos gratuitos por el PNT a los pacientes tratados en el sector privado.

**Conclusión** Para que un paquete de intervenciones de esa naturaleza funcione, los PNT deben tener la firme resolución de apoyar, supervisar y evaluar los proyectos PP. Por otra parte, el recurso a una organización no gubernamental local o una asociación médica como intermediario puede facilitar la colaboración. Invertir tiempo y esfuerzo para asegurar que se establezca un diálogo suficiente entre todos los interesados directos es importante para generar confianza y lograr un alto nivel de consenso.

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