



**FINDING
MISSING PEOPLE
WITH TB BY ENGAGING
THE PRIVATE SECTOR**

10

STOP TB FIELD GUIDE

Stop TB Partnership

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FIELD
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StopTB Field guide 10: Finding Missing People with TB by Engaging the Private Sector

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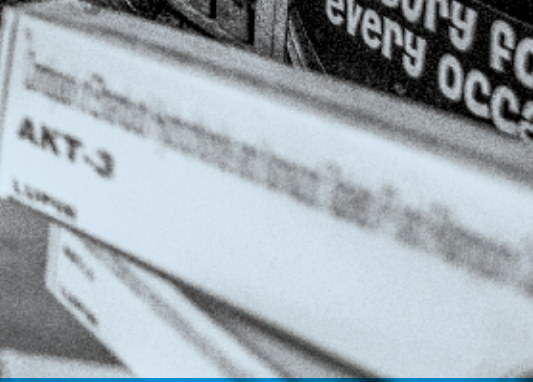
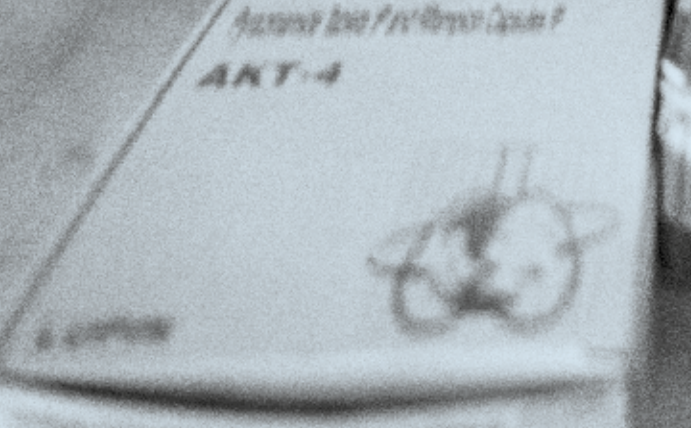
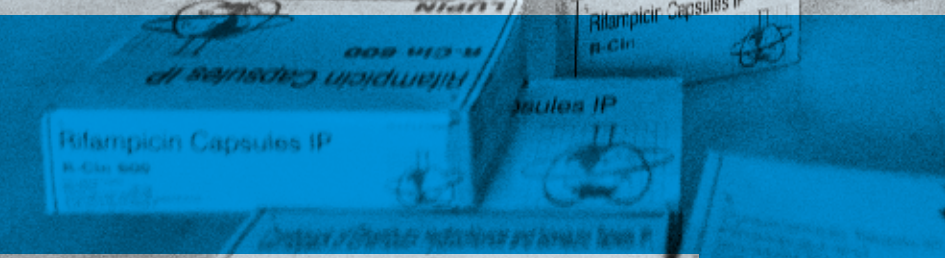
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A Cadbury for every occasion

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PURPOSE OF THIS DOCUMENT

This document is one in a series of 11 field guides produced by Stop TB Partnership in collaboration with the Global Fund to Fight AIDS, Tuberculosis and Malaria, Interactive Research and Development Global (IRD), KIT Royal Tropical Institute, and multiple global experts and implementation partners. The field guides rely on practical experiences and expertise of implementers and are meant to help national TB programmes and other TB programme managers to identify the best strategies for finding people with TB who are missed by routine health services.

This document is not to be treated as guidance, but rather as a collection of considerations, tools, experiences and examples that highlight successes and challenges in implementing effective TB case-finding interventions and may assist in their planning. This field guide addresses engagement of non-public sector providers in delivering TB care interventions, specifically focusing on implementation experiences.

This field guide went through extensive peer review by the agencies and individuals acknowledged below. It presents a range of examples from peer-reviewed literature and implementation practice. Where not cited, examples are provided by TB REACH.

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The production of these field guides represents a significant effort, bringing together more than 60 experts from over 30 different institutions globally in the spirit of partnership to help address a major barrier in the TB response: the fact that millions of people with TB are still missed by the current routine health systems.

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Abbreviations

CBO	Community-based organization
CHV	Community health volunteer
CHW	Community health worker
CME	Continuing medical education
CXR	Chest X-ray
DOTS	Directly observed treatment, short-course
DR-TB	Drug-resistant tuberculosis
DST	Drug-susceptibility testing
FBO	Faith-based organization
FDC	Fixed-dose combination
FLD	First-line drug
GP	General practitioner
HCW	Health care worker
IMPACT	Innovations and Multisectoral Partnerships to Achieve Control of Tuberculosis
KOL	Key opinion leader
MDR-TB	Multidrug-resistant tuberculosis, defined as resistance to rifampicin and isoniazid
M&E	Monitoring and evaluation
MoH	Ministry of Health
MoU	Memorandum of Understanding
MR	Medical representative
NGO	Nongovernmental organization
NSP	National Strategic Plan
NTP	National TB programme
PMV	Patent medicine vendor
PPIA	Private provider interface agency
PPM	Public-private mix
RMP	Rural medical provider
SAP	Standalone provider
SEM	Social enterprise model
SLD	Second-line drug
TB	Tuberculosis
THP	Traditional health practitioner
TSR	Treatment success rate
UATBC	Universal Access to TB Care
UHC	Universal health coverage
WHO	World Health Organization
Xpert	Xpert MTB/RIF assay, a cartridge-based nucleic acid amplification test (NAAT) for rapid tuberculosis diagnosis





1. INTRODUCTION

1. INTRODUCTION

National TB programmes (NTPs) of all high-burden countries now include private sector providers in their national strategic plans (NSPs) for TB as a recognition of this sector's wide reach and potential for participation in TB care and prevention. The magnitude of this stakeholder's participation in health care can be understood through examples like India, where more than three quarters of the country's health expenditure is estimated to take place in the private sector (1). The proportion of people treated for TB in the private sector can range from approximately 5% to over 40%, based on a triangulation of prevalence surveys, inventory, and drug-consumption study results. However, there is an observable gap between estimated and notified treatment volumes for people with TB in the private sector (2). For example, in Indonesia, the private sector accounts for 42% of treatment but only 9% of notifications, suggesting that this sector could contribute significantly to notifications if

collaboration with public programmes were strengthened (3,4,5,6). TB medicine sales are another useful entry point to understand the role of the private sector in the care-seeking behaviours of TB patients. A 2011 analysis of IMS Health¹ data from 10 high TB burden countries revealed that private markets in four countries (Pakistan, the Philippines, Indonesia and India) had the largest relative volumes of medicine sales. These markets observed first-line TB drug (FLD) sales that would account for 65–117% of the respective countries' estimated annual incident cases (7). More recently, researchers used a large, nationally representative commercial dataset on sales of 189 anti-TB products available in India to calculate the amount of TB treatment in the private sector in 2013–2014. They found that India's private sector was treating a significant number of patients for TB (2.2 million) – a figure that is appreciably higher than was previously recognized (8).

1. recently consolidated with Quintiles to become IQVIA

Box 1.

What constitutes private providers in health care?



The term “private providers in health care”, as used in this document, includes any provider and facility under private or non-public ownership. This can include general practitioners (GPs), specialist practitioners, pharmacies, laboratories (standalone and chains), hospitals, medical colleges, employee health care systems, traditional health practitioners (THPs) and informal providers. Such providers and institutions are not subject to direct, line-management control by public sector officials, although they may fall under the regulatory and financial regimes established by the public sector. Some discussions even include semi-government setups, such as railways and defense services in the private sector. Market assessments in Malawi (9) and Viet Nam (see also figure 2), illustrate the wide variety of stakeholders that comprise the private health care market and their strategic significance in care seeking related to TB.



Effectively engaging private providers has had demonstrated impact in improving TB prevention and care. In 1998, in one of the earliest examples of a private sector engagement in TB diagnosis, a Hyderabad-based nongovernmental organization (NGO) called Mahavir Hospital engaged private doctors (“allopathic and homeopathic”) to provide TB diagnosis and treatment for an initial population of 100,000. This number expanded to 500,000 over a 3-year period (10). A retrospective analysis of project data showed that private provider engagement helped to achieve high treatment success rates (TSRs), low levels of drug resistance, early diagnosis and patient adherence. Furthermore, it was found that this approach was cost-effective (11). Even in resource-rich settings, private providers have been demonstrated to play an important role in TB management. For example, in response to the 1992 multidrug-resistant (MDR-) TB outbreak, the New York City Bureau of Tuberculosis Control (BTBC) worked with private providers on a large-scale MDR-TB prevention and care programme, which had successful treatment outcomes for patients (12).

1.1 The focus of this field guide

Given its strategic importance, there has been substantial research and documentation on how NTPs should approach private provider engagement (7,13). Some additional materials are listed in Section 6 of this field guide. The Public-Private Mix (PPM) Working Group of the Stop TB Partnership has convened actors, shared lessons, and issued a number of documents on the topic. These documents provide frameworks outlining which TB tasks (14) and approaches (15) may be suitable for dif-

ferent types of providers, and present planning documents that focus on assessment (16) and planning (17) for engagement efforts at national rather than pilot scale. In this context, the objective of this current field guide is to contribute to “bottom-up” approaches, i.e. from an implementation perspective; in other words, the aim is to use some specific past and ongoing projects to emphasize key issues that are central to the implementation of TB projects involving the private sector.

1.2 Value proposition: Why include private providers in the TB response?

A recent analysis of 10 approaches to finding people with TB who are missed by routine health programmes implied that case-finding approaches among providers not covered by NTPs should be prioritized (2). Patients often prefer private providers who may be more courteous and provide more convenient services with more flexible payment options (18). Gender-related issues and stigma may be other reasons as to why vulnerable populations, regardless of economic status, prefer to seek care in the private sector (e.g. patient-friendly hours and additional privacy to help maintain confidentiality) (19). Box 2 summarizes the patients' perspective on the private sector.

Box 1.

Why do patients choose the private sector?

Patients accessing care for TB find the following advantages in using the private sector. These factors add up to the perception of better value for money, even when costs are higher:

- **Convenience**, in terms of hours of operation, shorter wait times, geographic proximity
- **Patient-centric**, in that, private providers cater to patient needs and requests, and provide tailored diagnosis and care, rather than rigorously adhering to guidelines and procedures; they may also invest in building personal relationships with patients.
- **Confidentiality**, allowing patients to better hide their affliction, and providing a feeling of security for the patient
- **Competitive pricing and services**; private sector providers have to compete for business and are therefore perceived to offer better quality of care (diagnostics and medicines) value compared public sector services.
- **Perception of receiving a higher quality of services** than in the public sector

Studies in Kenya (2013) and Tanzania (2009) found that 33% and 40% of patients, respectively, identified via active case finding had already sought care in the non-public health sector (20,21). In addition, TB prevalence surveys – which seek to identify the health-seeking behaviours of all bacteriologically confirmed people with TB, including those previously missed – indicate that large numbers of people who are missed by routine TB health sys-

tems may be found in the private sector. Patient pathway analyses from 13 countries (which include countries with the highest TB burdens globally) have shown that about 60% of all TB patients begin their care-seeking pathway in the private and informal health sectors (see Figure 1) (22). Furthermore, a strong correlation has been found between missing people with TB and the proportion of private sector care seeking (please see Table 1).

With this high degree of private sector reach and patient preference, there are several **powerful reasons to engage the private health sector in TB programmes**:

1. To find the people who are missed
2. To find the people with TB early and reduce transmission
3. To reduce impoverishment from the high cost of private health care, and extend financial protection and social support to all patients
4. To accelerate the introduction and uptake of new TB tools by accessing private channels, and pioneer strategic purchasing for universal health coverage (UHC)
5. To reduce suboptimal outcomes (e.g. mortality, morbidity, drug resistance, transmission) due to inappropriate treatment

These reasons are key factors driving a shift in NTPs' attitudes towards the private sector. There is now growing acceptance that private providers can be partners instead of antagonists.

Patient pathway analyses from 13 countries demonstrating that 60% of care seeking starts in the private sector (22) **Figure 1**

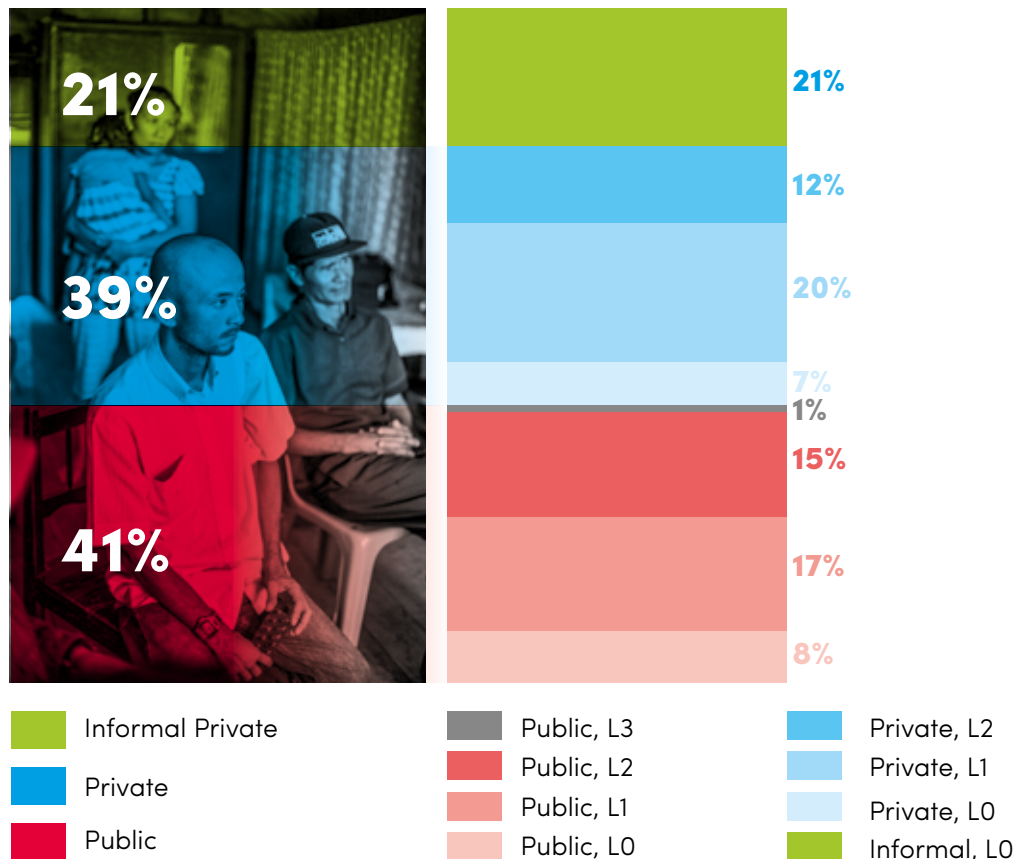


Table 1.

Correlation between missing TB cases and % initial care seeking in the private sector

Country	Incidence (000s)	% of global missing cases	% of initial care seeking in private sector
India	2,740	25%	74%
Indonesia	842	11%	74%
China	889	3%	-
Philippines	581	7%	70%
Pakistan	525	5%	85%
South Africa	322	3%	-
Nigeria	418	9%	67%
Bangladesh	364	3%	84%
DR Congo	262	3%	43%
Myanmar	191	2%	78%

Source: Guy Stallworthy's PPE landscape report 2018

1.3 Complexities inherent in engaging with the private sector for TB care and prevention

Designing TB-focused engagements with the private sector poses challenges due to some inherent complexities like its heterogeneity and limited responsiveness to traditional models of engagement.

The private sector is heterogeneous.

The private sector in health care includes different types of participants. Each of these has its own characteristic business model that requires a tailored approach for successful engagement. An important differentiating factor within the private sector is whether the provider operates on a for-profit or not-for-profit basis. The quality of treatment may also vary widely across providers: Studies investigating the quality of care in the private sector

have shown that quality may not be as robust in some settings (23,24,25), leading to diagnosis and treatment delays. All private sector providers can participate, to varying degrees, in each step of the patient care pathway. The following sections provide an analysis of some of the major types of private providers, their unique features and challenges, as well as opportunities for designing tailored engagement approaches.

Figure 2

Private sector matrix for TB care and prevention

Numerous private entities are directly or indirectly involved in TB care and control, including providers and retailers, international aid and non-profit organizations, distributors and manufacturers

Private sector stakeholders of TB care and control in Vietnam								
	Private hospitals	Private providers & clinics	Private drug retailers & pharmacies	Traditional medicine practices	Bi-/Multilaterals ^(e)	(I)NGOs ^(e)	Socio-political/professional organizations ^(e)	Pharmaceutical companies & distributors
Est. # of entities	~100	~30,000	~54,000	~12,000	~10 ^(e)	~10 ^(e)	~15 ^(e)	~1,400
Role in the provision of TB care and control	<ul style="list-style-type: none"> Limited to cases with severe symptoms suspecting TB Private hospital services usually not affordable for TB patient demographic 	<ul style="list-style-type: none"> First or second point of contact for TB patients with symptoms Provide clinical diagnosis (often with CXR) & chemotherapy 	<ul style="list-style-type: none"> First point of contact for symptomatic patients TB patient encounter mostly on a first-/one-time only basis 	<ul style="list-style-type: none"> Limited to cases not suspecting having TB TB is generally considered to be outside of the capabilities of traditional medicine 	<ul style="list-style-type: none"> Provide funding and TA with limited direct patient care Fund and source SLD 	<ul style="list-style-type: none"> Conduct social & scientific research Test novel partnership and treatment models Provide TA and advocacy 	<ul style="list-style-type: none"> Involved in community advocacy and suspect referral Knowledge exchange Conferences Advocacy 	<ul style="list-style-type: none"> Manufacture and sell TB drugs Foreign TB drugs sourced by distributors
Key benefits	<ul style="list-style-type: none"> Higher quality perception Confidential 	<ul style="list-style-type: none"> Confidential Patient-centric Convenient 	<ul style="list-style-type: none"> Confidential Convenient No wait times PP substitute 	<ul style="list-style-type: none"> Cheap Not chemo-therapy based 	<ul style="list-style-type: none"> National level advocacy & policy-shaping TA 	<ul style="list-style-type: none"> Augment limited NTP resources Fuel innovation 	<ul style="list-style-type: none"> Strong domestic network Advocacy 	<ul style="list-style-type: none"> Domestic availability Non-NTP supply of anti-TB drugs
Key downsides	<ul style="list-style-type: none"> Non-adherence to treatment guidelines Expensive 	<ul style="list-style-type: none"> Treatment quality No reporting Can be costly Conf. of interest 	<ul style="list-style-type: none"> No counseling No follow-up 39% GPP rate High retail price 	<ul style="list-style-type: none"> Inappropriate treatment and counseling 	<ul style="list-style-type: none"> Creates external funding reliance HSS instead of patient care 	<ul style="list-style-type: none"> Limited reach & pat. interaction Gov't reliant/ no autonomy 	<ul style="list-style-type: none"> Limited involvement & technical expertise on TB 	<ul style="list-style-type: none"> 45% WHO-GMP (not enforced) Counterfeits Corruption
TB patient engagement								

Notes: a) Only referring to those with reported involvement in TB care and control; includes WHO, CIDA, Union, CDC, UCSF, Woolcock, OUCRU, HAINW, VATLD, KCNV, MCNV, PATH, URC, PSI, FHI, Women's Union, Farmers' Union, Youth Union, Red Cross, Veteran's Association, CCHD, CHCE, HIV+, VMA, Ha Noi Association of Private Medical Practitioners, Hai Duong Association of Private Practitioners and others; Legend: ● - None/very low; ● - Low; ● - Medium; ● - High; ● - Very high

Sources: Friends for International Relief, Vietnam

Engaging the private sector requires innovative approaches and skillsets.

Designing private sector engagement approaches is complex because the key stakeholders that constitute the engagement space may have very different principles. For example, NTPs tend to be driven by the goals of improving access and treatment outcomes, while private sector players may need to focus on increasing their profits and organizational value. Not-for-profit providers may be driven by an organization-specific focus and/or donor requirements. Innovative approaches that are strongly rooted in market understanding are required to design models that align with the stakeholders' respective interests, which may or may not compete with each other. The **public management mindset cannot be used for designing private sector models** because the two principal actors have different philosophies that need to be aligned. Projects targeting the private sector – but led by the public sector – frequently have limited success because the

private sector is more likely to engage in collaborative approaches rather than responding to directives. The public-private divide with respect to attitudes may be reduced once more countries start channelling significant public funds to private health care provision (as Indonesia and the Philippines have done recently, and as is common in developed countries). Until then, project designs need to carefully align with the dynamics of the private sector provider's particular market. To the extent possible, project staffing should include people with relevant experience and skills. For example, a project that aims to influence private GPs to use correct diagnostic practices will find it advantageous to include personnel who have experience in pharmaceutical marketing with a focus on GP engagement. Box 3 lists factors that motivate providers and that can be used to design win-win, non-antagonistic strategies for engaging the private sector.

Box 3.

What motivates private providers?

Positive incentives (monetary and non-monetary)

- Rapid symptom relief and positive treatment outcomes for patients, leading to “customer satisfaction”, patient retention and referral to other possible clients
- Revenue and profit margins
- Respect in the community and local government
- Professional certifications

Negative incentives (monetary and non-monetary)

- Regulatory: Depending on the regulatory requirements and enforcement, TB care and drug dispensing or mandatory case notification may be regulated and infractions punished with fines or withdrawal of licenses
- Tax implications (collaborating with governments may reveal the full extent of providers' practice and increase the tax liabilities)

* This is not a comprehensive list of positive and negative incentives for private providers to participate in TB control; it should be supplemented with insights from the local communities for which the engagement project is being designed.

1.4 Key considerations and preparatory questions

Project approaches need to be designed according to the type of provider being considered for engagement in TB prevention and care. A team tasked with designing a model to engage private providers (regardless of type) can start the

process by exploring a few basic questions aimed at understanding the key issues at play. The questions provided in Box 4 may serve as a guide and a checklist (see also Resources 5 and 8 in Section 6: “Further Reading”).

Preparatory questions for engaging private sector providers

Box 4.

1. What are the opportunities for engagement?

- Is there a significant gap in case finding (as indicated by prevalence estimates or other proxy sources like drug sales) that the private sector can address?
- What is the project objective (e.g. finding x number of missing cases, increasing notification by y%, improving rate of treatment completion by z)?
- How will the private sector providers contribute to TB control?
- What steps in the patient pathway will they participate in?
- What is the business model, or what is being offered to the private providers?

2. What are the criteria for engagement?

- How many providers and what provider type(s) should be engaged for achieving the maximum impact on the defined project objectives?
- What criteria should be utilized to select providers?
- What type of contract should be considered?

3. What, if any, is the government/NTP role, beyond receiving case notifications? Will the NTP supply commodities (e.g. diagnostic vouchers or FDCs) or direct benefits transfer?

4. Is there a possible role for an intermediary agency to connect public health objectives with private providers' concerns? If yes,

- What will the agency do?
- What will its reporting structure be?
- How will it be financed (in both the short term and the long term)?

5. What are some challenges that can be foreseen?

- What market dynamics (health-seeking demand, competitive supply-side landscape, regulatory environment, policy implementation and corruption, pricing and financing dynamics, e.g. OOP and UHC) of this particular sector might help/hinder project goals?
- What are some early warning signs to consider?

6. What are some past/ongoing projects in this space that can yield usable insights?

In general, the process of engaging with private providers can typically proceed according to the following steps, which should be modified and combined based on the context:

- **Mapping:** The process of mapping the private providers practicing in the project area, though often time-consuming and logistically challenging, is an essential first step. After project field staff have been trained on project objectives and protocols, they can start the mapping process, which can consist of marking the providers' name and location on a map (GPS coordinates are ideal, if possible). Some projects (like the PATH project in Mumbai, India) choose to identify the influential providers or the ones with the largest practices before starting the mapping.² Such "champion providers" can be identified through conversations with chemists/pharmacists who track major prescription generators for business purposes. Other sources of this information are local public health offices and online medical provider aggregating agencies (e.g. Practo, Docplexus). Sometimes, project workers conducting the mapping may find it helpful to be armed with some sort of official "letter of authorization" or approval (carefully worded to be collaborative rather than directive) from the NTP, local health department or regulatory body as they go through this mapping process. The methodologies used for WHO's inventory studies (26) can help guide this mapping process. If possible, additional data points can also be collected during the mapping; for example, type of TB services provided, willingness to engage with the NTP, volume of patients and current number of referrals. Box 5 lists some other selection criteria that may be useful to implementers.

2. Expert interviews

Box 5.

Selection criteria for private sector providers

The selection criteria will vary based on the geography, the amount of investment available, and other determining factors. A few example criteria are:

- Private provider's interest and willingness to engage with the project and with the NTP (if relevant);
- Estimated patient (not necessarily TB case) footfall at the provider;
- Influence among other providers (i.e. key opinion leaders [KOLs] and large chains can be "first movers" and "trendsetters" that can form the basis of large-scale private sector engagements; private sector facing projects in India have highlighted "champion providers" who have become valuable partners to NTPs in finding missing cases);
- Location of the provider in a community with a high burden of TB and/or that has poor access to public sector facilities;
- Provider offering some free services (where large numbers of low-income community members might be accessing care);
- Provider has already engaged with the NTP/other public health systems in some form (may have participated in trainings, for example).

- **Identifying partners:** The mapping should be followed up with detailed introductory conversations (one-on-one or in groups depending on providers' availability) and invitation to participate in continuing medical education (CME) programmes. Data collected from mapping can be useful in making priority lists to help ensure that the project is cost-efficient (as per the 80/20 percent principle, i.e. roughly 80% of the cases are managed by 20% of the providers, which should be the ones prioritized). Private providers are usually reluctant to share their time (the busier the practice and hence the more valuable from an engagement perspective, the less time the provider has to listen); therefore, messaging needs to be crisp and have a clearly defined value proposition. It is also worth investigating whether there are national requirements for providers to engage in CME in order to maintain their license, and whether CME courses need to be approved by the Ministry of Health (MoH) in order to count as official credits. Implementers may also consider advocating for the establishment of such CME courses on TB. If the training offered is not MoH-recognized, it may be less valuable. One challenge frequently encountered with CME is the lack of participation on the part of busy private practitioners, and alternative engagement approaches can be applied to engage busy practitioners who also serve vast numbers of people in need of TB screening. Such approaches include multiple short sensitization sessions at the clinics, mobile apps and other e-learning tools, and peer learning opportunities, among others.

- **Designing a mutually agreeable model:** Given the unique context and challenges of each high-burden country, there is no "one size fits all" model for engaging private providers. These projects, indeed all private sector projects, need an iterative design process and course correction if necessary. Some past and ongoing models are described in Section 3.







2. ROLE OF GOVERNMENTS AND INTERMEDIARY AGENCIES

2. ROLE OF GOVERNMENTS AND INTERMEDIARY AGENCIES

Government agencies and/or the country's NTP can play different roles in private sector engagement projects, depending on the project design; some possible roles include:

- **Regulatory/policy-focused:** During interviews and/or other mapping processes, private providers might name the complexity of state notification systems as a key barrier to notifying TB patients. Even when notification is mandatory for all providers, governments and NTPs can help engage clinicians by setting up and managing more straightforward and streamlined notification processes (including waivers on not including personal identifiers of TB patients when notifying). Governments and NTPs can also provide GP accreditation, training and support to ensure quality assurance and adherence to treatment guidelines among private providers. Government approval and acceptance of referral and notification processes is essential. The SHOPS project in India found that a combination of provider training, streamlined diagnosis and communication systems, and project support for notification led to a 56% increase in notifications by private providers (27).
 - **Procurement:** Governments can support private providers by procuring diagnostics and supporting linkages to diagnostic facilities. Governments could provide free TB medicines to patients of private clinicians and ensure the provision of quality-assured medicines to registered pharmacies. Alternative solutions, such as reimbursement mechanisms for diagnostics and TB medicines through insurance or other systems, need to be explored and incorporated as required in order to ensure that successful business models existing in the private sector are not disturbed.
 - **Coordination and evaluation:** Given their large scope of authority, governments can facilitate coordination among pharmacies, drug regulatory authorities and medicine control councils, ensure quality control mechanisms, and measure project impact (through an increase in overall case notifications, for example).
- Support from and collaboration with the local government (especially the local NTP) is a key ingredient for success in private sector engagement projects. Box 6 elaborates on how to foster partnerships with the NTP based on the experience of a Mumbai-based project.



Another important consideration during the design phase of a private sector engagement project is the type of contract that will formalize the engagement and the role, if any, of the intermediary or “interface agency” (sometimes called a private provider interface agency [PPIA]). A PPIA is a third-party organization – often an NGO – that is tasked with coordinating the communication and information exchange between the public and private sectors.

In a 2006 WHO bulletin, a review of 15 private sector engagement initiatives across eight countries showed that NTPs interacted directly with for-profit providers in seven of the initiatives; in the remaining eight initiatives, NTPs collaborated with for-profit providers through

intermediary agencies. The review concluded that “soft” relational contracts were indeed effective in most initiatives. However, to contribute to effective outcomes, performance-based contracts (drugs-for-performance contracts, for example) may be considered if such

There are a few potential areas of discord between the private and public sector that should be discussed in the early stages of the project:

- 1. Accepting private sector TB case management:** Public health agencies tend to distrust the private sector's practices in TB management and prefer to work via a linear process, first trying to elevate the quality of the private providers and then engaging with them. The reverse approach (first engaging, then elevating the quality), however, is innovative and may yield faster results. For example, NTPs may accept that private doctors prefer to treat patients with individualized clinical care as opposed to NTP-approved standardized TB regimens.
- 2. Enabling case notification:** Private doctors are more likely to comply with the laws on mandatory case notification if the process is not cumbersome or detrimental to business. NTPs can aid in this process by ensuring that case notification procedures are user-friendly, efficient, and physicians can continue managing their patients after notifying, i.e. they are not required to transfer their patients to the public sector.
- 3. Supporting TB patients with public health actions:** NTPs play a crucial role in providing necessary public health support to patients being treated by private practitioners. Such support includes counselling, contact investigation, HIV counselling and testing, treatment monitoring, follow-up and reporting on treatment outcomes. All available social and financial support for TB patients and families should also be extended to patients treated in the private sector.

contracts are acceptable to all stakeholders (28). Some evidence has suggested that private sector engagement projects that use PPIAs make greater contributions to TB case detection (29). As demonstrated by many of the projects described in this chapter, PPIAs can perform a variety of functions in a private provider project, including:

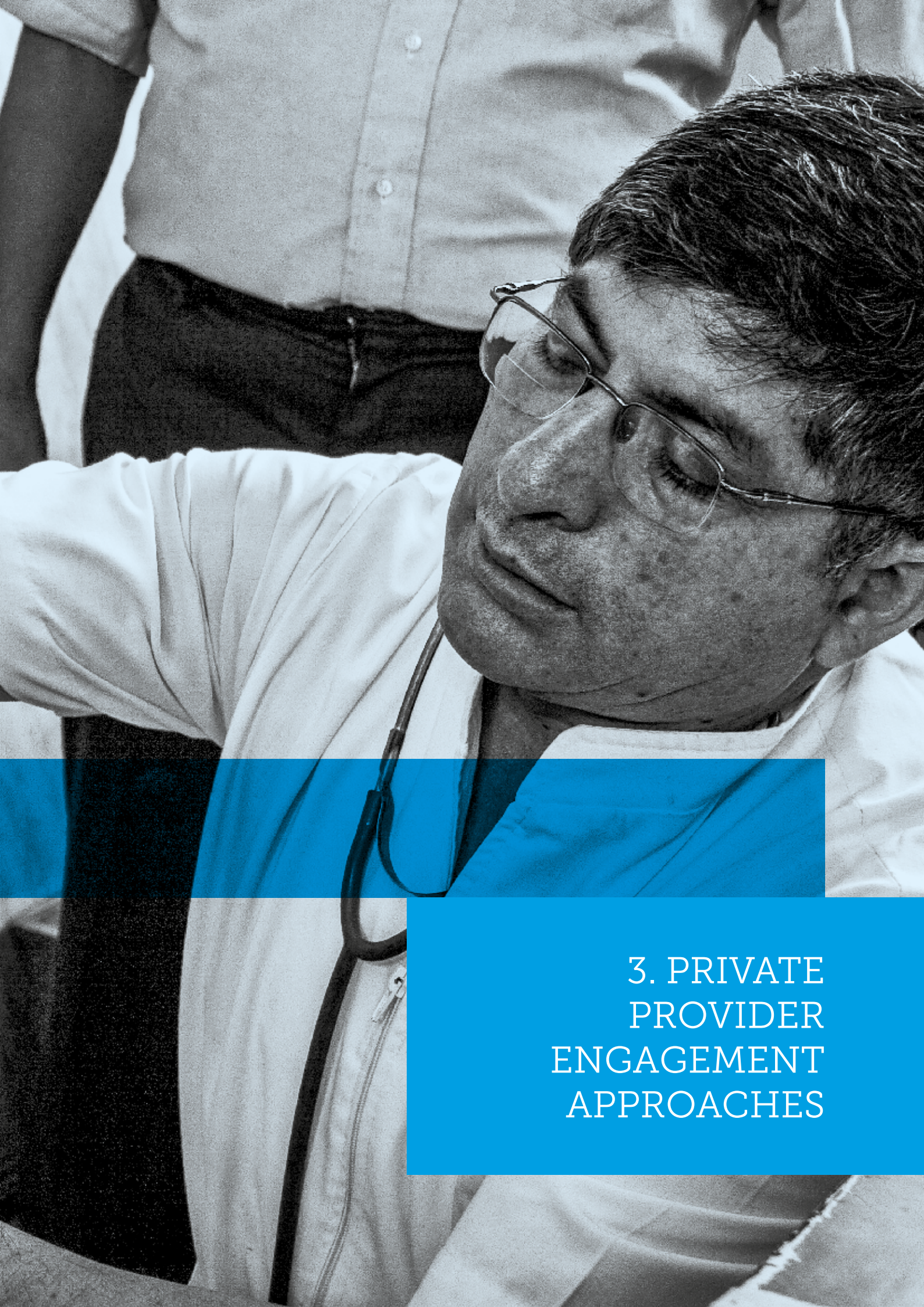
- Managing contractual arrangements with private providers;
- Spreading awareness on guidelines and standards of care;
- Tracking specific metrics (for patients being managed by the engaged private providers), e.g. adherence, linkages with drug resistance testing and care, HIV status and contact tracing;
- Following up patients through to treatment completion and providing feedback to their physicians;
- Managing data systems and incentive payment systems (mobile systems may be considered for transparency and ease-of-use);
- Enabling the smooth functioning of referral systems.



The Mumbai TB project (described later in Section 3.7) is an example of a PPIA-managed project established as a collaboration among a few organizations and managed by PATH. In Indonesia's Hospital DOTS Linkage (HDL) project (described in Section 3.2), linkage between the NTP and private specialists became effective only after a stakeholder-based provincial DOTS coordinating committee (PDC) was established as the recognized interface between the various stakeholders (30).

Intermediaries may have issues with sustainability, so there should be conscious planning to either transition the model to government management or develop contracting ability within the government so that the government can sustainably outsource the engagement work to the intermediary.





3. PRIVATE
PROVIDER
ENGAGEMENT
APPROACHES

3. PRIVATE PROVIDER ENGAGEMENT APPROACHES

This section describes various past and ongoing engagement approaches, including some less successful ones, for the following private provider types:

- Private GPs
- Private specialists
- Private pharmacies
- Private laboratories
- THPs and informal providers
- Miscellaneous health systems (public and private) that are likely to be involved in TB prevention and care, but not generally linked to the NTP
- Multiple providers

3.1 Private general practitioners (GPs)

Private GPs are often the first source of care for patients with possible TB. The importance of robustly engaging private GPs is underscored by the fact that the GPs' diagnoses and treatment practices may not be aligned with NTP recommendations and thus may contribute to treatment delays and failures (1,31,32,33). This is not necessarily a global phenomenon, however: A comparative cross-sectional descriptive study in five private and 10 public health facilities in Kaduna State, Nigeria demonstrated that adherence to national TB treatment guidelines was high in both private and public health facilities. The same study found higher TSRs at the private health facilities (83.7%) than at the public health facilities (78.6%) (34).

In the past, private GPs were considered to be partners only for sensitization activities (around guidelines and referral processes) and for referrals. Recent projects, however, have been more ambitious, demonstrating that GPs can participate in multiple steps along the patient pathway. Some models of engaging private GPs are listed below in increasing order of effort investment; these include:

- Sensitization and referrals;
- Screening camps;
- Active case finding;
- Social franchising models and social business models (for diagnosis alone, or diagnosis followed by treatment and notification).

Sensitization and referrals

At its simplest, a GP engagement project can consist of sensitizing practitioners to refer all patients with possible TB to NTP-run care centres. The sensitization can take the form of advocacy, targeted media campaigns, visits to selected GPs, in-clinic information sessions, invitations to training sessions, and CME programmes. The focus is to address concerns around GPs' TB diagnosis and treatment skills by coaching them to recognize symptoms early, to adhere to NTP guidelines on diagnosis (and standards of TB care), to refer patients, and to notify the NTP. As perhaps the earliest approach to private sector engagement, referrals demand the least amount of effort on the part of the GP. The approach may also align with market dynamics, given that some GPs may not be interested in treating TB due to lack of revenue and/or stigma-related issues. At the same time, requiring all TB patients to be treated at NTP centres may also imply that NTPs do not fully "trust" the private sector to diagnose and treat patients in accordance with national guidelines.



Some projects have used this strategy as an entry point to engage GPs in projects of a broader scope, for example, the social enterprise model (SEM) project in Karachi, Pakistan (described in detail in section 3.1) and the Mumbai project (described later in section 3.7). The USAID-funded project "Innovations and Multisectoral Partnerships to Achieve Control of Tuberculosis (IMPACT)" was built around the goal of creating a referral system between private providers, including standalone providers (SAPs), and NTP-managed DOTS clinics in the Philippines (35,36).

Notification of diagnosis and treatment outcomes



Under this model, TB patients are retained by private GPs, but notification of both diagnosis and treatment outcomes by GPs is simplified. For example, in Indonesia, the USAID-funded Challenge TB project uses a so-called "district PPM" approach, which employs a reduced set of fields for notification and a simple app to mediate notification (37). A TB focal point at the local health centre receives the notification, which triggers the transfer of a patient box of TB medicines to the private provider. A similar process occurs with hospitals, but for hospital notifications, the receiving entity in the public sector is a district TB officer who is dedicated to private sector engagement. The project support has focused on establishing these communication pathways. As a result of this work with both hospitals and GPs in Indonesia, the total private sector contribution to case notifications in project districts has nearly doubled in absolute numbers, increasing from 13,116 in 2015 to 26,534 in 2017.³

3. Expert interview with William Wells (USAID)

Screening camps

Under this model, private GPs are invited to participate on a fee-for-service basis in “screening camps” for multiple diseases, including (but not limited to) TB, diabetes, respiratory conditions, and other common ailments. Such camps draw community participants for free screening services and in most settings help identify people with TB early. In exchange for their services, GPs also garner increased visibility in the community, which can indirectly boost their clientele. There are no documented instances of screening camps being used as a stand-alone strategy; they are primarily used as a strategy to build connections with private GPs and for them to see the value of partnering with collaborative projects.



The Sehatmand Zindgai project (described on page 37) continues to utilize this model to engage providers in all of its geographies. Screening camps were an important part of the Union’s SPARK-TB (Slum Partnerships to Actively Respond to Tuberculosis in Kampala) project, which worked with private GP clinics to improve access to quality TB diagnosis and treatment among low-income communities in Kampala, Uganda. In 2 years, SPARK-TB engaged with 70 private clinics in Kampala through which 1,700 TB patients were diagnosed and started on treatment (38).

Active case finding

Active case finding is an innovative approach and one that requires a high level of effort. Trained “screeners” – typically laypeople with 2–3 days of training – are placed in private GP clinics, usually in the reception area or waiting rooms. These screeners are often recruited from the community through NGO partners and introduced to GPs during the mapping process described above. The advantage to the GPs who are willing to participate in this approach can be monetary (in the form of financial incentives) or non-monetary (for example, expansion of patient case-load, marketing opportunity from being associated with a government project, etc.). The implementation of this model is similar to facility-based screening, in that, screeners ask the patients, as well as the people accompanying the patients, to respond to a few questions aimed at identifying people with possible TB. The next step is to link the people with TB symptoms to diagnosis using various methods, such as a referral note to a diagnostics centre and/or vouchers for free testing and transport. This approach is likely to be productive and cost-effective mainly in high-density population settings (e.g. for GPs with very busy practices in low-income urban neighborhoods or GPs working in group practices). In Karachi, since 2004, Interactive Research and Development (IRD) has been utilizing this approach at private GP practices where 50–200 people can be screened per day.

Social franchising models in diagnosis, treatment and notification

Franchising is a business model that can be defined as “an arrangement whereby a manufacturer or marketer of a product or service (the franchiser) grants exclusive rights to local independent entrepreneurs (franchisees) to conduct business in a prescribed manner in a certain place over a specified period” (39). “Social” franchising uses the same fundamental elements of franchising: a clearly defined product and delivery mode, strict quality criteria, quality assurance, and a brand that can be accessed by service providers if they follow set standards. In most settings, social franchising models are innovative in TB prevention and care, but may have been utilized for reproductive health and HIV prevention and management. These models are generally “partial” or “fractional” franchises, meaning that the franchise activities add to the existing care

being provided. Adding TB to an existing franchise can be attractive, since the huge effort of mapping and engaging providers has already been accomplished during the establishment of the franchise. However, issues with the sustainability, long-term plan and trajectory of franchises remain (40). One possible solution is to link such franchises with incipient insurance efforts and financing (41).

To be attractive to a private GP, the franchise partnership should be convenient and add to the GP’s practice. The package of benefits that private GPs can access on becoming a franchise partner needs to be developed based on an understanding of the physicians’ needs and challenges. Some examples of benefits include access to training, diagnostic services, TB medicines, and adherence support for the GP’s patients.



One such project in Kenya utilized TB REACH funding to increase the detection and management of people with TB in 48 private clinics in the Nyanza region (42). Work was carried out through two existing networks of franchised private clinics under the brand names *Tunza and Huduma Poa*. The project goals were to:

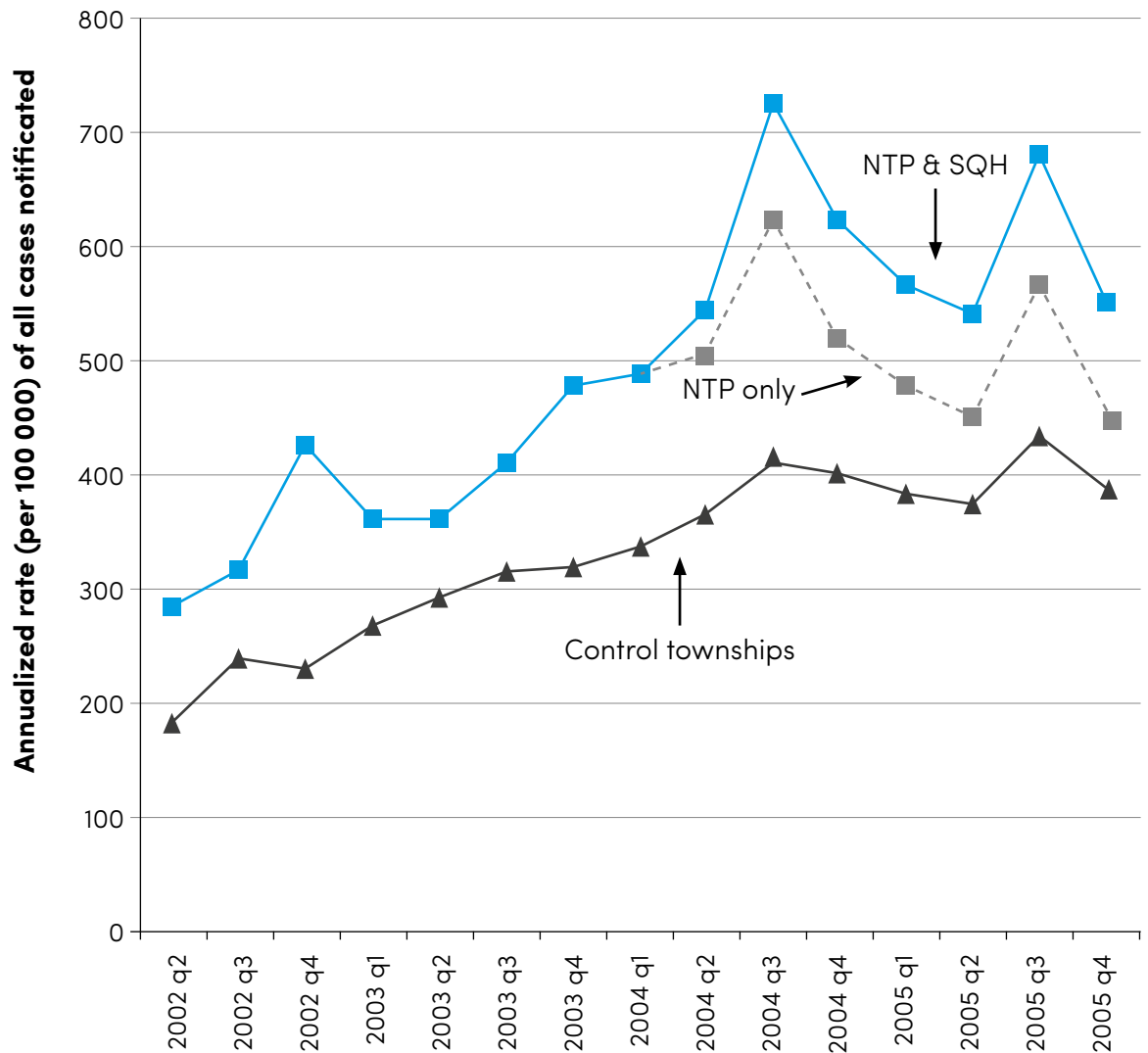
1. Improve case detection at the clinics through training and supportive supervision of clinicians and laboratory technicians utilizing MoH curriculum and standards;
2. Increase case finding in the community by conducting household visits and group sessions using 92 trained community health volunteers (CHVs);
3. Enhance contact tracing by linking index cases found in clinics or in the community with the CHVs for follow-up;
4. Increase case detection both at clinic and community level among people with TB who are living with HIV.
5. Between August 2014 and June 2015, the project screened 464,514 people both at community and facility levels with 981 TB cases detected (0.2% screening yield) (42).



In Myanmar, Sun Quality Health (SQH) is a social franchise scheme run by a local branch of Population Services International (PSI). Private GPs provide quality-controlled and highly subsidized TB diagnosis and treatment, as well as a range of other clinical services; the GPs also follow NTP guidelines, including notification. In exchange, PSI delivers branded patient kits to the GP franchisees free of charge. The incentive is that the branding is an indicator of quality and a source of pride (43). In addition, the franchisor organized referral pathways that have increased traffic to the clinics. Figure 3 illustrates how the SQH project has contributed to TB case notification in Myanmar.

Figure 3.

Trend of TB case notification rates in SQH and control townships in Myanmar (43)



A third example of social franchising is the Good Life project in Pakistan, managed by the Greenstar Social Marketing (GSM) group.⁴ GPs who become members of this network can access free or highly subsidized medicines and diagnostics, advertising, and training. Good Life staff also provide on-demand administrative support (assistance in case notification, patient referral and follow-up) to private GPs. The GSM group uses strong advocacy campaigns as the core of its work, focusing on private health providers' main interests and motivating them to practice the NTP's standard diagnostic and treatment regimens. As of 2016, the Good Life project had trained nearly 15,000 health care providers on Pakistan's national TB guidelines, and providers in the network had managed over 85,000 TB patients in the country.

4. http://www.greenstar.org.pk/health_pakistan

Social business models



In response to the need to create long-term, sustainable solutions for underserved communities that depend on private care, some organizations have started operationalizing “social entrepreneurship” or “social business” models. These models attempt to convert a portion of the revenues generated through for-profit activities into charitable impact. In 2013, Community Health Solutions (CHS) in Pakistan set up a network of over 70 primary care centres (called “Sehatmand Zindgai” centres or SZCs), laboratories and X-ray facilities. This private network provides free or highly subsidized TB diagnostics and treatment supported by the revenue generated from other (non-TB) laboratory and radiology tests. Staffing and operational details of the SZCs are as follows:

- Unlike the partial franchises described above, which modify the practices of existing facilities, SZCs are newly established as part of the start-up of the social business.
- Each centre has an NTP-trained doctor, a medical receptionist, a nurse, a technician and a cleaner/support staff. This core staff is responsible for all aspects of centre operations, including diagnosis of presumptive TB patients, treatment, follow-up and lab sample collection. Some of these centres also function as NTP-designated “Basic Medical Units (BMUs)”.
- Each centre also has a medical representative (MR) responsible for detailing a network of 50–60 private health providers around the centre to generate referrals for both commercial lab tests, which help support the social business model, and presumptive TB patients. The MRs map and identify providers, and organize community camps and camps at network providers’ premises. The “sell” to private providers is a free service for their economically disadvantaged patients, generation of goodwill and loyalty of their patients, increased OPD traffic, free training, and a referral fee of US\$ 4 for every TB patient identified. In addition, doctors get support in the paperwork necessary for notification. All diagnostics (including digitized X-rays, usually with CAD4TB, and GeneXpert) are free of cost, as are the medicines.
- Every five to eight centres (depending on geographical spread) are considered a “region”. Each region is headed by a manager supported by a staff member who manages a mobile X-ray van and mobilization. This regional team goes out to support the MRs in their territories for planned camps and active case finding. The region also has a network manager who supervises the MRs. At the provincial level, there is a head of operations to whom four to five regions report.
- The network of health centres also employs a Training Coordinator, an M&E Coordinator and people for support services (admin, finance, HR).

In 2017, the SZC network of 58 centres screened a total of 67,238 clients, of which 2,974 TB patients were diagnosed and put on treatment (4% screening yield) (44).



The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) has put forward another social business model for TB at national scale that has received international attention (45). With support from TB REACH and UNITAID, icddr,b designed and implemented an SEM to partner with the private sector for large-scale TB care and prevention. The project set up a network of over 1,800 private doctors (specialists and GPs), as well as three screening centres equipped with chest X-ray (CXR) and GeneXpert systems to test presumptive TB cases identified by the network doctors. The screening centres offered free Xpert testing and subsidized CXR. TB patients were registered for treatment at NTP centres or under the referring private providers. Between September 2013 and December 2015, a total of 655,751 individuals were screened for TB and 6,912 patients identified (1.1% screening yield) (46). While donor support was essential for starting the activities, icddr,b has supplemented donor funds with some of the revenue generated by X-rays and other tests for non-TB-related diagnoses.

3.2 Private specialist practitioners

Private specialist practitioners are also known variously as pulmonologists, chest specialists, TB specialists, and lung specialists. They represent one of the most important segments to engage because, together with private GPs, they treat large numbers of people with or at risk for TB in many urban areas. A sizeable proportion of these specialists also work in the public sector, which adds a layer of complexity in the movement of patients between the two sectors (47).

Similar to GPs, specialists can participate in all the steps along the patient pathway, although their involvement in the latter part of the pathway (i.e. treatment, support and notification) may be more cost-effective. There are key differences between GPs and specialists that should be taken into account when designing engagement approaches. For example:



- Pulmonologists are unlikely to be involved in focused TB screening alone, but they could be encouraged to consider TB in the differential diagnosis of each pulmonology patient.
- Chest specialists may be easier to engage than GPs, as there are fewer of them and they may see more TB patients than the average GP.
- There have been instances of specialists neglecting the treatment (and adherence) component because the potential revenue from diagnosing new cases may be more significant than providing ongoing care; specialists may also be focused more on catering to the demands of the patients in their waiting rooms than on establishing systems for tracking long-term care.
- Specialists are more likely to be approached by patients with drug-resistant (DR-) TB, patients who have complications, and parents with children who might have complicated TB.⁵

Specialists can potentially play a key role in the diagnosis, treatment initiation and follow-up of DR-TB cases and clinically challenging cases, and in paediatric case management.

Potential incentives and models for engaging with private specialists

Approaches to connect private specialists to TB programmes have included incentivizing specialists through appeals to their intellectual interests (e.g. research and publications) and opportunities for the use of new medicines and rapid molecular diagnostics. Specialists can also be approached through clinician opinion leaders or through professional associations such as chest societies. In 2000, the Indonesian NTP and MoH started the HDL project to link the Indonesian Hospi-

tal Association (PERSI) with the NTP in response to the high rates of TB treatment by chest specialists in private hospitals with no reporting/linkage to the NTP. The project focused on getting buy-in of local decision-makers for the partnership, providing incentives, establishing Memoranda of Understanding (MoUs), training specialists, and strengthening referral pathways. As a result, the number of notified TB cases increased from 722 in 2000 to 2,356 in 2004 (30).

In countries with very high patient burdens, investments in support structures

5. Expert interview with Shibu Vijayan [PATH]

like call centres may help to ensure linkages to care and treatment compliance. Organizations that have implemented call centre services to promote private specialists' engagement include World Health Partners (WHP) in Bihar (48,49), PATH in Mumbai and IRD in Karachi.⁶ Their experiences suggest that specialists are appreciative of treatment support provided to their patients via specially organized call centres. The call centres connect with TB patients via text messages (SMSs) that not only remind clients to take their medication and visit their doctors for follow-up, but also provide information and counselling services. These

centres can be staffed by NGO or NTP workers who provide either information and support or medical advice. Support through call centres and collaborative programming with private specialists has resulted in higher degrees of patient retention, which is a win-win both for the providers and for the case-finding projects. PATH in Mumbai has also leveraged the call centres for getting notification information from providers, tracking adherence, providing results and feedback to providers, and addressing patients' grievances. Figure 4 describes the structure and principal operations of a call centre.

6. Interviews with project implementing teams

Services at a call centre Figure 4.

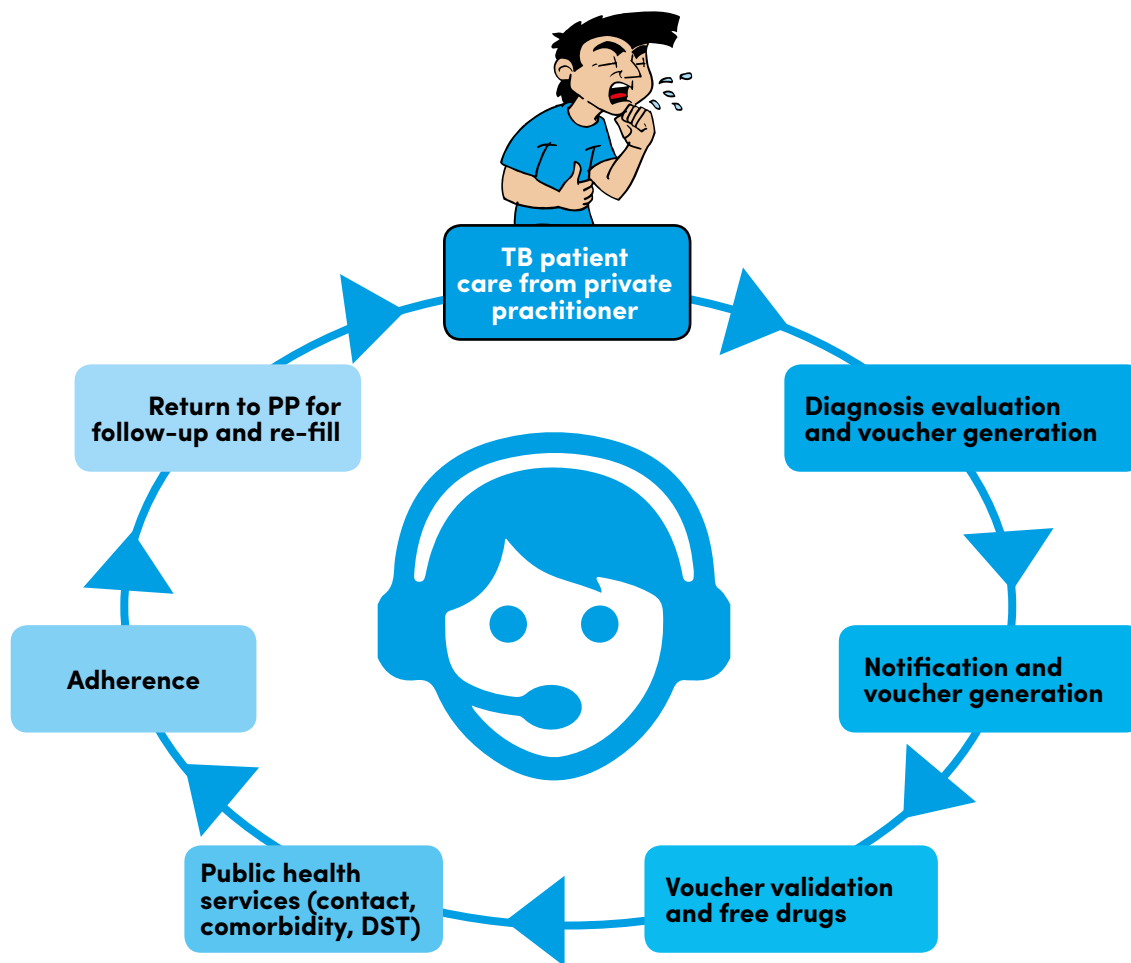




Universal Access to TB Care (UATBC) Project

in India:⁷ A very important milestone for PPM in India has been the Universal Access to TB Care (UATBC) Project implemented in Mumbai in Maharashtra, Patna in Bihar, and Mehsana district in Gujarat. Through this project, TB patients seeking care in the private sector receive free TB medicines in order to achieve universal access. Once a qualified practitioner diagnoses and decides to treat a TB patient, s/he notifies the case using ICT-enabled mechanisms and shares prescription details relevant to TB medicines with the contact centre. Based on this communication, a unique voucher number is generated and shared with the practitioner and patient. The voucher number is written on the prescription, which the patient carries to the chemist. The chemist then validates the voucher with the help of the contact centre and provides the patient with free TB medicines. The patient is contacted by phone to confirm the receipt of the free medicines and later at home, extending public health services such as contact screening, adherence and infection control counselling, HIV testing, drug-susceptibility testing (DST) services, and so on. Figure 5 shows the patient pathway for the project. The project has demonstrated the importance of intermediary agencies for carrying out the required programme management activities and coordination in the engagement of private practitioners and laboratories. The project has engaged large number of private practitioners, hospitals and laboratories and increased TB notifications substantially. Many important factors have led to the success of this project. For example, qualified private sector providers are allowed to manage TB patients (instead of referring them to the Revised National Tuberculosis Control Programme [RNTCP]), and TB patients receive free services, including easy digital e-vouchers for free TB medicines and laboratory tests such as CXRs, sputum smears and Xpert MTB/RIF. The field staff of intermediary agencies have aggregated diverse private providers into a network, engaged, and made frequent visits to private providers. Intermediary agencies have further ensured that patients were notified to the RNTCP and linked to care. Good adherence monitoring and support are offered to all TB patients to help them complete treatment, quality of care is monitored, and targeted feedback has been used to improve performance over time (see Figures 6 & 7).

7. <https://tbcindia.gov.in/index1.php?lang=1&level=3&sublinkid=4711&lid=3265>



TB Notifications from public and private sectors in the UATBC Project

Figure 6.

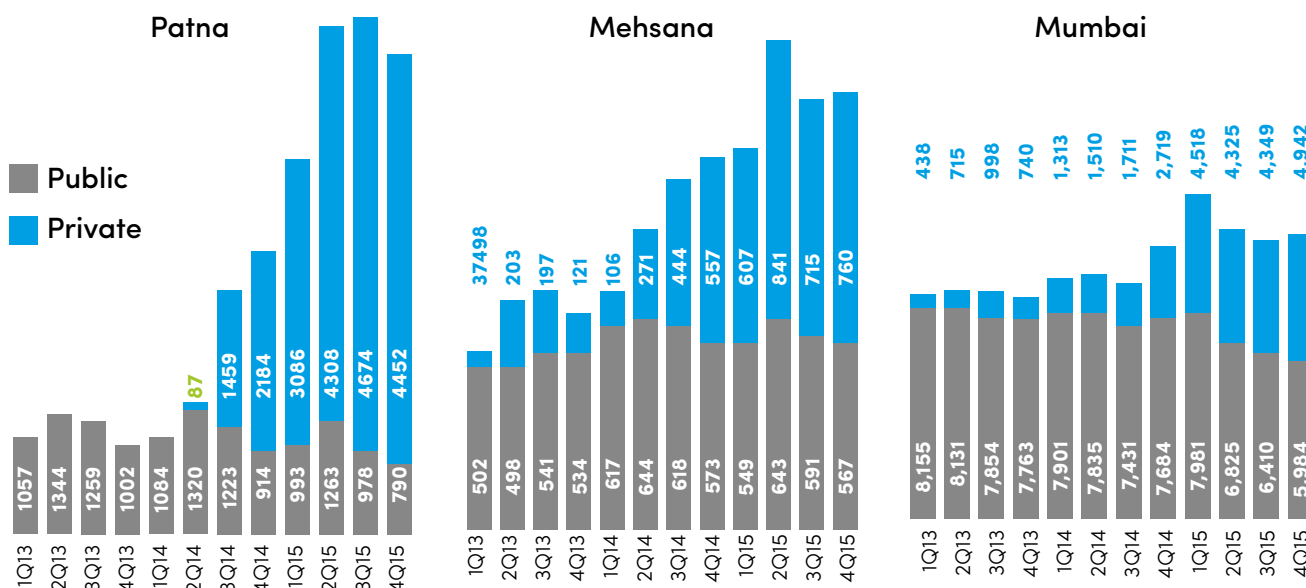
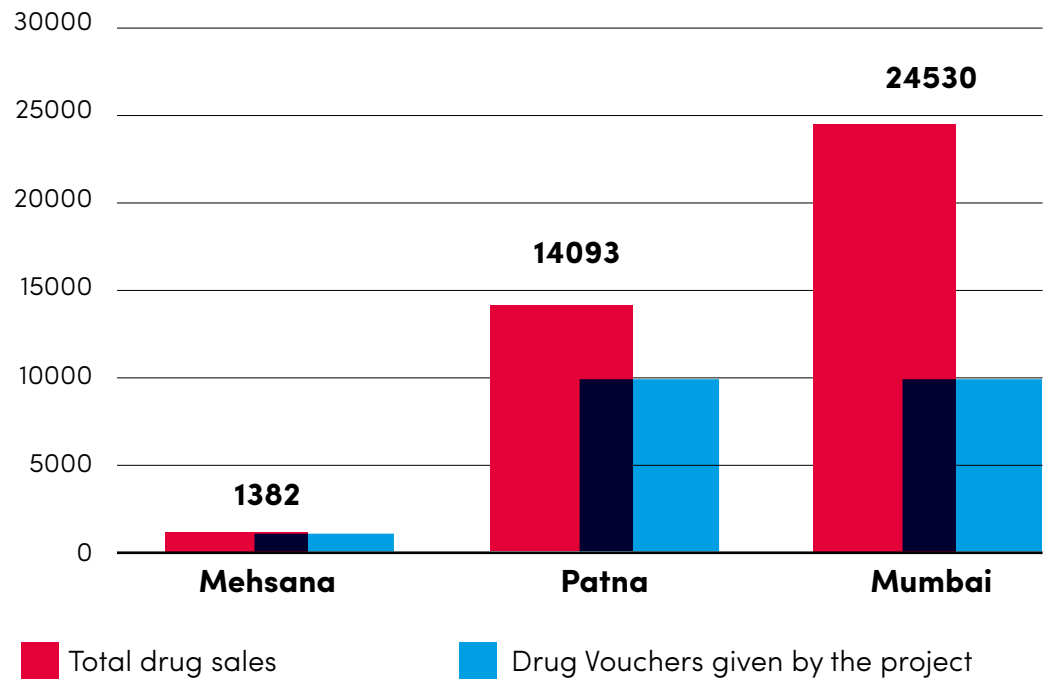


Figure 7.

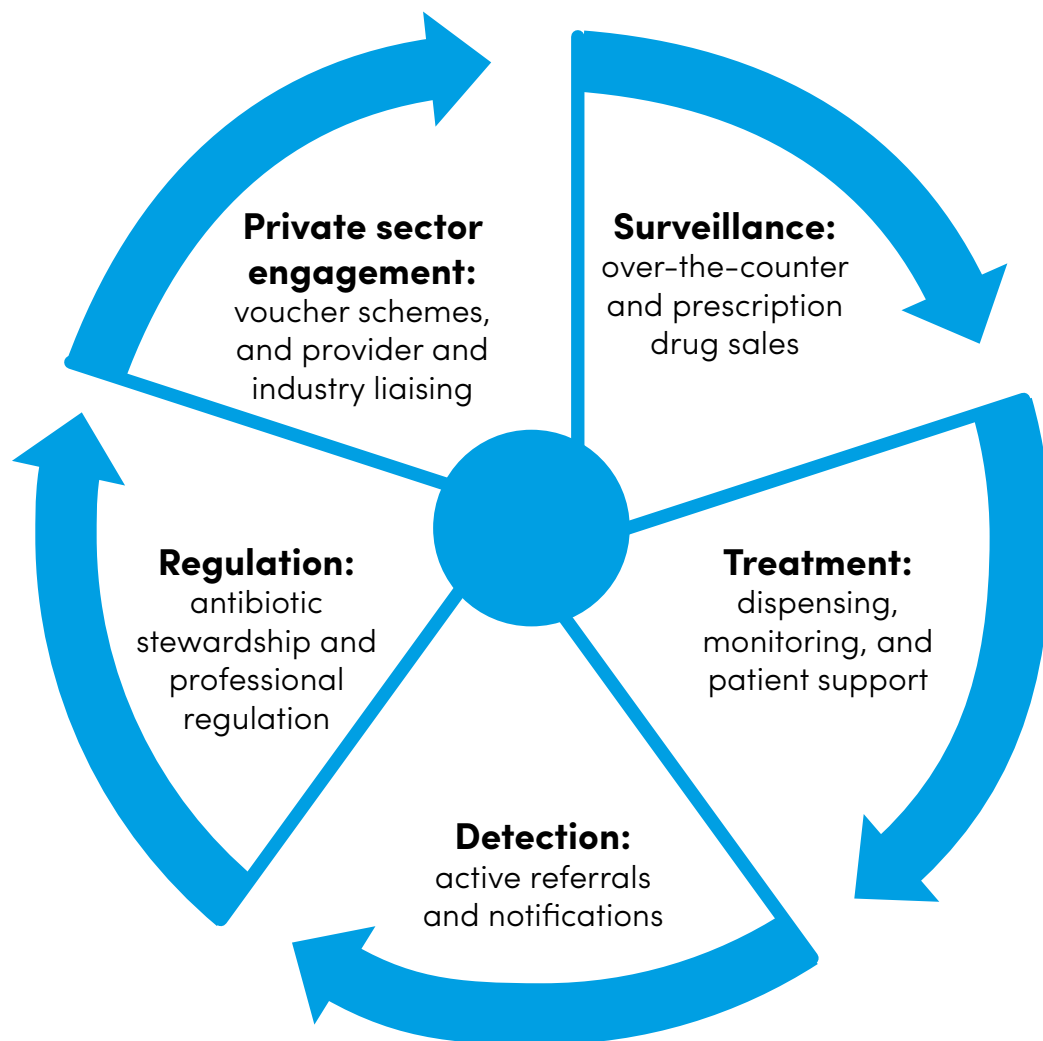
Patient coverage: Patient-months of TB medicines sold (Sept 2017) and proportion covered under e-voucher system in the UATBC Project



3.3 Private pharmacies and pharmacy networks

Private pharmacies have been called “a neglected link in TB control” (50). India alone has over 850,000 private pharmacies (51), of which less than 9% have been engaged in TB control efforts. Also known as drug stores, chemists or medical vendors, these providers are a frequent first step in many patients’ care-seeking behaviour. One study in Pakistan found that 42% of TB patients first visited a pharmacy for their symptoms (52). Estimates suggest that Pakistan’s network of 42,700 registered private facilities involved in the provision of health care services consists primarily of chemist shops (69%) and medical stores (27%) (53). A 2009 cross-sectional study at three municipal hospitals in Tanzania found that more than half of the identified people with TB

had visited health facilities for care prior to their diagnosis, with pharmacies being the most common type of facility (52% of suspects) (21). When people with TB visit a drug store first, it tends to increase the delay in diagnosis. In Thailand, this extra delay was found to be 6 to 12 weeks; the more visits a person made to drug stores, the longer the delay in visiting a qualified provider (54). Pharmacies can be possible sources of information to access the major TB drug prescribers and KOLs in the providers’ community, as well as to understand the pattern of TB prescriptions. In some countries (India for example), pharmacies are mandated to preserve TB prescription details and can be a source of this information (see Figure 8).



Engaging private pharmacies: screening and referrals

Pharmacies can be engaged for a wide variety of roles and tasks in TB care and prevention, especially given their high numbers, long hours of operation, absence of appointments, lack of user fees, and strong community presence (55). Opportunities to engage private pharmacies include training pharmacists on symptom-based screening and setting up referral linkages. Several best practices can be considered to ensure sustained engagement of pharmacies, such as securing involvement of pharma-

cy associations, focusing on pharmacy chains to aid in broader dissemination, and reinforcing specific models, including a requirement for referral log-books in accreditation criteria and the use of current or former drug detailers to reach out to pharmacies (51). In some instances, pharmacists may feel empowered by their ability to screen people, refer them for testing and serve as treatment supporters. In such settings, NTPs should consider incentives, whether monetary or educational (such as additional training).



Pharmacies have been successfully engaged for TB screening and referrals at large scales in Cambodia and India. Identifying pharmacies as a critical first step in the health-seeking behaviour of Cambodians, the NTP made them the main component of the country's PPM programme, which was rolled out in 2005. Over 1,000 pharmacies signed MoUs with the NTP, committing to attend training sessions and regular meetings; to refer patients who exhibit TB symptoms to the nearest public health facilities; and to be open to supervision from the public sector. There has been an impressive increase in referrals from the PPM programme – from 1,268 in 2006 to 9,043 in 2010 – and, more importantly, project evaluations have yielded useful provider-related insights that have been incorporated into subsequent training and engagement strategies (56). In India, the RNTCP partnered with more than 75,000 pharmacists across four states in 2012–2014 through creative communications materials, incentives, training workshops, and TB helplines. Across the four states, 15% of the referrals from the partnering pharmacies were found to be positive and were placed on treatment (57).



There are also a few examples of pharmacy engagements for screening and referrals for which implementation was less than successful. In 2011–2013, an organization in Kenya worked with TB REACH Wave 1 support to enhance case detection through a combination of strategies, which included referrals from private slum-based pharmacies. Evaluation of this strategy showed that it had been less productive than other interventions (e.g. community mobilization and active case finding using peer approaches) in terms of finding additional cases. Consequently, the pharmacy engagement was discontinued in the second year of the project so as to prioritize the more productive interventions. It is believed that the limited number of referrals from pharmacies was driven by apprehension around possible client losses. Two other projects have had limited success partnering with pharmacies for referrals. A research project in Ho Chi Minh City, Viet Nam engaged with 150 pharmacies over 21 months to evaluate the feasibility of a new referral system. The evaluation generated useful insights, finding that 61% of the surveyed pharmacists shared the fear that a referral to the NTP might result in clients turning to other pharmacies. The pharmacies referred 373 people with presumptive TB over the project duration, of which 10 were diagnosed with TB (2.7% screening yield). A similar research project in Cochabamba, Bolivia in 2002 partnered with the NTP and the local pharmacists' association (ASPROFAR). The project was implemented across 70 pharmacies, which were influenced by visits from and meetings with the research team, ASPROFAR leaders and public health officials. Over a period of 2 months, the pharmacies referred a total of 41 clients for screening in the NTP (i.e. an average of 0.29 clients per pharmacy per month), of which three were diagnosed with smear-positive TB (58).

Engaging pharmacies for treatment linkage and support

Private pharmacies are often connected to community health workers (CHWs), and partnerships can be fostered to promote treatment linkages and completion. A TB REACH project in Nigeria engages patent medicine vendors (PMVs) in communities on the outskirts of Abuja, where many working commuters live in slum-like dwellings. Through training and networking with CHWs for rapid sample transport and treatment linkages, PMVs

have been able to identify 4,180 people with presumptive TB, of which 135 (3.2%) were diagnosed. PMVs note that their participation in the project is boosting their status in the community, which is useful for identifying people who might otherwise be lost to follow-up. A similar project operated by KNCV in Nigeria on a much larger scale engaged over 2,367 PMVs, identifying 1,568 people with TB out of 18,979 referred (59).

3.4 Private laboratories and laboratory networks

In many urban settings in Asia and Africa, people with symptoms suggestive of TB visit private GPs and specialists who refer them to private diagnostic facilities because they are more convenient and/or are perceived as having a higher standard of care than public facilities (60). These standalone laboratories may also have walk-in clientele, with a blurred line between providers of diagnostic tests and providers of general consultations. These private laboratories present valuable engagement opportunities for screening TB patients and shaping the diagnostic practices towards early and accurate diagnosis. Laboratories are often connected to multiple physicians and can serve as a source of aggregated data on private physicians' TB diagnoses and treatment practices.

Engaging laboratories through screening, referrals and notification

Like private pharmacies, private laboratories in some high-burden countries can provide people with an early entry point where TB patients can be diagnosed, linked to treatment and notified. Carrying out facility-based screening at laboratories is an easy win, given the higher-than-average likelihood that clients visiting laboratories may have TB. Screeners stationed in front of busy laboratories can offer free diagnostics, including CXR. The operational aspects of this approach are similar to the facility-based screening described in Section 3.1 on engaging private GPs. Offering access to new diagnostics can also promote engagement with private laboratory providers.



A TB REACH project in Dhaka, Bangladesh linked up with private laboratories that agreed to share data with the NTP. In exchange, the TB REACH project placed GeneXpert machines in the laboratories and stationed project-funded health workers to screen people for TB and refer those with a positive screen for Xpert testing (61).

This kind of model, i.e. placing publicly procured GeneXpert machines in private facilities and providing these facilities with publicly procured Xpert cartridges, has the potential to effectively expand the public sector's service delivery capacity. Such arrangements have been seen in a number of countries, but usually in only a handful of facilities. In addition, private facilities are typically not considered when countries map the high-volume facilities that are most in need of GeneXpert machines, even though inclusion of these facilities should be considered.

Market-shaping to improve diagnostic practices

Because privately owned diagnostic providers are motivated by high returns on investment, their financial model does not necessarily align with the public health objectives of early and accurate diagnosis. Historically, high-quality WHO-endorsed TB tests like Xpert MTB/RIF have not been profitable in the private sector. Given that private providers are not eligible to access concessional pricing for these tests, the platforms and assays are high-priced; in addition, there are multiple players in the value chain, each requiring a profit margin. The high procurement and operational costs are then passed onto patients, making the WHO-endorsed tests unaffordable for many people with TB in high-burden countries. As a result, most countries have not engaged the private sector for GeneXpert use, meaning that cheaper, sub-optimal tests with higher margins of error ("home-brew" PCRs, for example) are widely used in the private sector. The use of such tests is the likely cause of misdiagnosis and/or delayed diagnosis, which results in increased disease transmission, drug resistance and mortality (62). A 2015 study on Xpert MTB/RIF pricing in the private sector found no commercial availability of Xpert testing in the private sector in six of the 12 countries with highly privatized health markets and an average price of US\$ 68.73 per test in the remaining six countries (compared to a fully loaded cost of \$20–30 per test paid by NTPs) (63). The same study, repeated in 2017, found that Xpert testing was commercially available in the private sector in seven of the 12 countries and patients paid US\$ 84.53 per test (a 23% increase that cannot be explained by inflation alone) (64).



The ongoing Initiative for Promoting Affordable and Quality TB Tests (IPAQT) project established in 2012 has partnered with private laboratories to increase access to Xpert MTB/RIF in the private sector through a high-volume, low-price strategy (65). Participating laboratories signed an MoU with the Clinton Health Access Initiative (CHAI) to obtain access to subsidized pricing for GeneXpert machines and cartridges. In exchange, they agreed not only to comply with a negotiated ceiling price for the Xpert tests, but also to notify all positive cases to the NTP (66). This agreement ensured that the final project design had private sector buy-in even before the project was rolled out. In India, the first IPAQT country, more than 700,000 Xpert MTB/RIF, Hain LPA, and BD liquid culture tests have been performed in about 200 private laboratories from 6,000-plus collection centres covering nearly 85% of Indian districts since implementation began in 2013. The project is a good example of a successful negotiation that kept market dynamics at the forefront of all discussions. The project team invited the CEOs of India's largest laboratory networks to participate in the earliest project design discussions, forming a project "secretariat" that allowed the CEOs to offer their perspectives on project structure.⁸ Interestingly, IPAQT has now gone beyond TB, to include HIV and hepatitis C tests, suggesting that such models might have a broader role to play in improving access to a variety of essential tests in the private sector.

8. From discussions with IPAQT project team

3.5 Traditional health care practitioners (THPs), rural medical providers (RMPs) and informal providers

The role of THPs and informal providers (commonly known as RMPs in India) in TB prevention and care remains largely underexplored, but is potentially important for awareness generation, early case detection and treatment linkage. These providers constitute a valued and trusted primary health care service that is often the first entry point to health care for a person with TB in many high-burden settings (48). These practitioners tend to share cultural values with their patients, and patients often find them more service-oriented and acceptable than conventional health system providers. Even more so than private providers in general, THPs' hours and locations of operation are accommodating and convenient to patients (48). They are also more affordable than other providers, and their pricing tends to align with the paying capacity of the community. Engaging THPs and informal providers in TB prevention and care should be based on evidence and employ culturally sensitive approaches.

Expansion of equitable health care access, advocacy and social mobilization

THPs tend to have high degrees of credibility and acceptance among those they serve. Therefore, they represent an effective medium for reaching vulnerable communities to convey information on TB care and prevention. Engaging THPs was one of the USAID TB Program South Africa's strategies for TB care and prevention, with THPs formally involved in advocacy, communication and social mobilization activities. For example, THPs participated in community dialogues, helped raise awareness, and distributed information, education and communications materials to their patients (67,68). These providers can also be trained for verbal/CXR-based screening and serve as community DOTS providers to support treatment adherence.

Sensitization and referrals

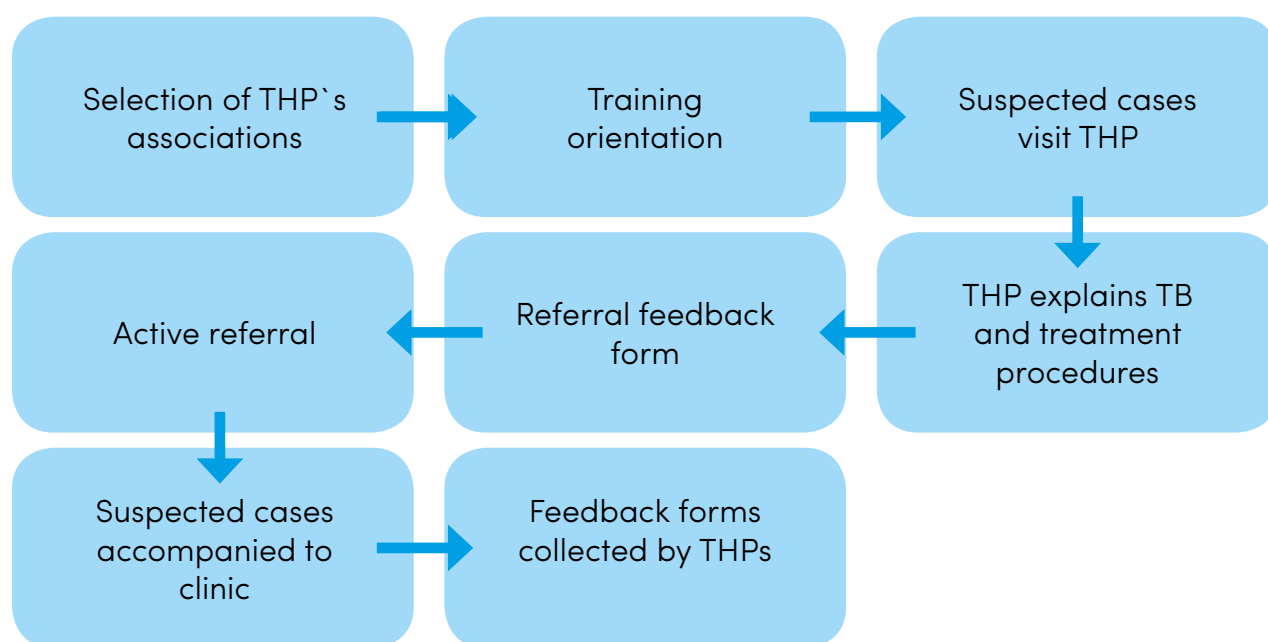
In many high-burden countries, THPs already treat large numbers of clients, especially vulnerable individuals located in difficult-to-reach areas that are poorly served by conventional health care systems. Engaging with THPs can connect such underserved communities to TB diagnosis and treatment facilities. In sub-Saharan Africa, the ratio of traditional healers to the population is 1:500, whereas the doctor to population ratio is 1: 40,000 (69). When seen as an easily accessible pool of affordable, trained and experienced human resources, these THPs can play a pivotal role in referring possible TB cases to formal diagnosis and treatment facilities.



It is estimated that there are about 30,000 THPs in Burkina Faso, compared to the 9,000 nurses and physicians available (70). The NTP in the country partnered with UNDP to implement a large-scale THP-engagement project over 2005–2007, during which time, THPs contributed to 8% of the country's TB case notifications (see Figure 9).

Figure 9.

Summary of project structure in Burkina Faso (70)



The Union's project Axshya (meaning 'free of TB'), launched in April 2010 in India, has kept RMPs as one of the key focus areas of its work. More than 13,000 RMPs have been trained to refer TB symptomatic people for sputum examination and incentivized to serve as DOT providers by the programme. These RMPs serve as the first point of contact for more than 70% of the rural population in the country (71). Similar engagement efforts in Bangladesh with so-called "village doctors" (who are semi-qualified providers, somewhere between a traditional healer and a pharmacist) have also yielded impressive and sustained outcomes (72).



Another engagement with informal providers had limited success: A TB REACH Wave 3 (2012) project in India enlisted "local herbal doctors, quack doctors, witch-doctors and faith healers" in a targeted active case-finding intervention in an especially hard-to-reach tribal population. The project activities consisted of awareness generation, screening, doorstep sputum collection, testing, treatment and notification. The project yield was negligible owing to a number of factors: The sputum quality was suboptimal and tested specimens generated no additional TB cases, eventually leading to an unwillingness on the part of the local RNTCP to accept referrals and notifications from these providers. Under RNTCP guidance, the model was revised to utilize trained CHWs called "Sahiyas" to screen and refer clients with TB symptoms to RNTCP centres and laboratories. The project referred 5,492 clients with TB symptoms between 2013 and 2014, of which 502 individuals were confirmed with sputum smear-positive TB (73). These findings demonstrate the careful planning around training and engagement that may need to go into THP and RMP engagement projects.

3.6 Other private health care systems

Other private (and quasi-public) health care systems that may be engaged in TB prevention and care include (15):

- **NGOs, community-based organizations (CBOs), faith-based organizations (FBOs);**
- **Private hospitals and medical colleges;**
- **Employee health care systems, such as in mines, military health care systems.**

These health care systems are often large and have the potential to find and treat significant numbers of people. The challenge related to these providers is that they may already be carrying out a great amount of TB diagnosis and treatment, albeit with little to no linkage to national TB notification systems. Key steps in planning an engagement with such systems are:

- **Mapping;**
- **Linking;**
- **Provision (or augmentation) of TB services if required.**



Mapping involves determining the reach and scope of the providers; how many providers, for example, are providing TB care services, of which kind (only screening and diagnosis, or entire patient cascade including treatment and support), and how many of those are linked to the NTP (16).

Linkage mechanisms should be built to enable such systems to notify and link TB cases to treatment and support. The next sections provide some context on the opportunities presented by such systems, as engaged in ongoing or past TB management projects.

NGOs, CBOs, FBOs and non-profit hospitals

These providers can be instrumental in the provision of screening services and in establishing links between patients and NTPs. They often play a crucial role in advocacy, mobilizing policymakers and the community to expand the reach of TB programmes. They not only create demand for quality health care services, but also provide them. In some countries with high TB burdens, NGO stakeholders contribute a major component of overall health care, and collaboration between the government and the NGO is seen as an effective way to improve the access to and quality of TB care. In Bangladesh, for example, the government retains ownership in the areas of policy formulation and budgetary control, but NGOs – with some contribution from the private sector – manage over 50% of the implementation of TB activities in both rural and urban areas (74).

Various factors can limit people's access to TB care as provided by a centralized NTP (e.g. shortages of skilled workers, irregular medicine supplies, absence of an effective referral system and patient socioeconomic factors like travel limitations). A decentralized, community-based model managed by NGOs can address some of these issues. In Pakistan, organizations such as the Aga Khan Health Services Pakistan (AKHSP), Pakistan Anti-TB Association (PATA) and the Marie Adelaide Leprosy Centre (MALC) offer services to a large number of TB patients (53). Gulab Devi Chest Hospital, a charity hospital in Pakistan, receives assistance from the NTP for its TB service provision activities. The hospital has recently initiated an elaborate referral sys-

tem that enables TB patients to get treatment at its local TB care centres (35). In general, engaging with NGOs and FBOs may be simpler, given their orientation to serve the public good. It may also be easier to deal with a single organization rather than with many unconnected individual providers. Indeed, in many countries in sub-Saharan Africa, many FBOs operate as an extension of the public sector. Since they are already so aligned with the public sector, FBO engagement may not even be considered part of private provider engagement. Nevertheless, given their large areas of influence in high-burden countries, FBOs may represent an underutilized partner in TB care and prevention, especially in the areas of advocacy and de-stigmatization.

Private hospitals and medical colleges

In India, 32% of the national bed strength is in the 150 plus private corporate hospitals (75). The most recent NSP includes plans to engage with these hospitals through incentives for diagnosis, treatment and notification. Furthermore, the NSP recognizes the need to develop electronic interfaces to facilitate reporting and referrals. Medical colleges in Nepal (two public institutions and 10 private institutions) work closely with the NTP to provide diagnosis and treatment. In 2006–2007, these colleges contributed to nearly 20% of the country's TB case detection. The Nepalganj Medical College (NGMC) alone, a private medical college and NTP partner since 2000, detects and treats 1.5% of all TB cases detected nationally (76).

Employee health care systems

Some of the high-burden countries have large parallel health care systems, e.g. those managed by mining companies, defense services (particularly true for India and Pakistan), railways, steel companies and other such organizations. The reach of these systems may be large. For example, a 2014 audit report indicated that the Indian Railways' health care services include 129 hospitals and 588 health units with a total of 13,963 beds, providing services to 20 million patients every year (77). However, their degree of linkage with the NTP is variable. India's RNTCP defines these systems as being outside of the state health department and includes such systems in the category of "other health providers" for PPM engagement. The RNTCP has guidelines to include employee health care systems in TB surveillance and management through referral mechanisms (37).

3.7 Looking ahead: multi-provider engagement approaches

Recent engagement projects have become more ambitious, experimenting with approaches that encompass multiple provider types in the same project. As expected, the approaches are multifaceted and typically include different strategies to align with each provider type. For example, in the Philippines, Manila-based NGO Tropical Disease Foundation (TDF) set up a PPM DOTS (PPMD) facility in 1999, in partnership with a local private hospital (Makati Medical Center) and the local NTP unit. With TSRs of 75%, the project was deemed a success and has since been expanded nationally. Partners include local private laboratories for diagnosis and hospitals and FBOs for treatment support (78). An example from the Philippines also illustrates a project that did not quite reach the mark. The UNILAB Center for Wellness and Good Health (UCWGH) – a hospital run by a pharmaceutical company – received referrals from private

doctors in the vicinity and provided drugs at a 15–30% discount. Of the 127 TB patients enrolled, the TSR was only 57.6% during the first year (2000) and 59.1% in the second year (79), which was lower than the national standard. This outcome indicates that there were some challenges with this intervention. Another example of a multi-provider engagement is from Indonesia, where a partnership consisting of the district health service, a mining company, a community hospital and private practitioners has been implementing a systematic approach to TB control in the rural Indonesian district of Timika since 2000. Between 2000 and 2007, the notification rates in Timika for all cases of TB and for people with sputum smear-positive disease exceeded not only the Indonesian national figures, but also WHO estimates for TB incidence. Notifications of extrapulmonary TB were more than 15 times the national average (80).

In Mumbai, PATH India along with the local NTP partnered with two local CBOs (the Association for Leprosy Education, Rehabilitation, and Treatment [ALERT] and Maharashtra Janavikas Kendra) to engage private providers, including informal and formal practitioners, laboratories, hospitals and chemists across Mumbai. The project established a technology-based patient registration and management platform for reimbursing service providers for early and accurate diagnosis, case notification and follow-up to ensure treatment according to national standards, and completion of treatment to increase cure rates. As of January 2018 (after three and a half years of project implementation), the PATH network consisted of 3,785 private practitioners, 294 pharmacists and 282 laboratories. During the project operation, 109,126 free CXRs and 66,325 Xpert tests have been conducted, and networked physicians have initiated 52,216 TB patients on treatment. The project has yielded significant increases in the TB case notification rate from the private sector – from 53 per 100,000 in 2014 to 181 per 100,000 by the end of 2017 (81). In addition to the impressive achievements in notifications, this project has also succeeded in networking different provider types into a more functional and coherent private health system, thereby strengthening the health system as a whole.

In Kenya, the Association for the Prevention of Tuberculosis and Lung Diseases (KAPTLD) is implementing a nationwide multi-provider programme called “Enhancing Quality of Tuberculosis Care in the Private Sector” (EQUAL-TIPS). Project components include roll-out and support to nurse-led TB clinics within private health care institutions, provision of high-quality fixed-dose combinations to private health care institutions, workplace TB screening, enrolment of informal providers and ambassadors of behaviour change, and data linkages between participating providers and the NTP. KAPTLD’s activities to engage the private sector have been high-yielding: In 2012, a total of 10,000 TB patients (comprising 10% of the total national TB case notification) were notified to the NTP from private providers in Kenya (82).





4. MONITORING AND EVALUATION INDICATORS FOR PRIVATE SECTOR ENGAGEMENT

4. MONITORING AND EVALUATION INDICATORS FOR PRIVATE SECTOR ENGAGEMENT

The eventual mark of success of any private sector engagement project, and indeed any project for TB case finding, is a measure of its potential impact on population-level indicators of TB either at the local or at the national level. One example of impact measurement at city level is the Stop TB Partnership's effort in 2013 to build an investigative model to measure the population-level impact of the Indus Hospital's aggressive case-finding campaign

in Karachi. The team was able to demonstrate that the project had doubled notification rates during the project year in 2011. More importantly, modelling showed that if this aggressive case-finding intervention were to continue for 5 years, TB notification rates would fall below their 2010 baseline, as this intervention could potentially trigger a decline in TB incidence of up to 45% and an estimated 72% decrease in annual TB-related mortality (83).

4.1 Building an M&E framework for a private sector engagement project

In 2003, the WHO Centre for Health Development asked Stanford University researchers to develop a protocol to measure the effectiveness of public-private partnerships. The process revealed that there is limited common understanding of the circumstances under which a public-private partnership approach is prefera-

ble to more traditional models, but suggested a few general components that can identify and quantify success in any private sector partnership. These components, though general, are relevant for TB-related private sector engagements and can be approached through qualitative and/or quantitative methods of analysis (84):

- Intended **outcome(s)** of the project
- Alignment of outcomes with **vulnerable groups** (e.g. children, gender equity, low-income groups)
- Specific, measurable **indicators** of the intended outcome(s)
- Specific **target levels** to be attained for these indicators
- Reliable, consistent (over time) **methods to measure** the outcome indicators
- Sufficient **longitudinal or comparison data** to support the conclusion that identified changes in the indicators were the result of the programmes and activities under study
- Identification and measurement of any **unexpected outcomes** (beneficial or detrimental)
- A way to measure whether the project reduced **pre-existing inequities**
- Designing a **cost-benefit analysis** methodology

4.2 Metrics for M&E

The components described in the previous section should provide a useful approach to planning the monitoring and evaluation (M&E) framework of any private sector engagement project. Some examples of M&E indicators used by past and ongoing private sector projects – many of which have been described in previous sections – cover the following categories:

- Project coverage and reach
- Project outcomes (case finding and notification rates)
- Impact on epidemiological indicators
- Quality of care (e.g. proportion of patients with microbiological confirmation; treatment completion rate)
- Financial performance and cost per client (e.g. cost per TB patient diagnosed, cost per TB patient linked to treatment)

These categories are described in more detail below along with possible methodologies. All metrics should ideally be stratified by age to assess whether the project is aligned with equitable access to care for children (a useful rule of thumb is that 10–15% of the additional detected cases should be children).

Project coverage and reach

Measurement of project coverage – metrics

Indicators related to project coverage and reach include:

- **Number and types** of providers engaged with, and the proportion of the total health care (public and private) available in the project and/or country geography represented by the engaged providers
- **Geographic areas** covered by the private providers engaged in the project
- **Project staff yields**, for example:
 - » Number of private providers engaged with per week
 - » Length of each interaction with providers

- **Activity levels and yields of the engaged providers**, measured by a variety of indicators, for example:

- » Number of referrals per month
- » Number of weeks since last referral
- » Number of notifications per month
- » Number of TB patients linked to diagnosis per month
- » Number of TB patients completing treatment per month.
- » Participation in CME activities and other project-related meetings
- » Utilization of incentives, vouchers and other services
- » Percentage of engaged providers that are reaching a certain threshold of participation (e.g. a certain number of referrals or notifications per month)

Measurement of project coverage – methods

- Use of information systems and mobile applications (projects can use applications developed in-house or modify existing products like salesforce)
- Utilization of project field staff to collect relevant data; the frequency of data collection from the field would depend on the project geographies and can range from weekly (in high-density areas) to monthly (in low-density areas).

Project outcomes (case finding and notification)

Measurement of project outcomes – metrics

The well-established M&E cascade should form the starting point of any measurement around how effective case finding has been:

- Number of patients screened under the project
- Number of people with symptoms suggestive of TB identified through screening
- Number of sputum samples sent for testing

- Number of samples tested
- Number of positive tests (testing yield)
- Number of TB patients diagnosed (may include clinical diagnosis)
- Number of patients diagnosed who are linked to treatment
- Treatment completion rate

Measurement of project outcomes – methods

- Use of project information systems
- Use of data from local NTPs

Impact on epidemiological indicators

Measurement of epidemiological impact – metrics

Population level epidemiological data, specifically:

- Incidence
- Prevalence
- Mortality

Measurement of epidemiological impact – methods

- Baseline and post-intervention surveys: If epidemiological data are available at the population level where the private sector engagement project is being implemented, the project should aim to track the change in notification from baseline to post-intervention. This, however, is challenging because disaggregated (between public and private providers) notification data are not easily available at the levels where such projects are implemented, e.g. at the level of cities and townships.
- Mathematical modelling can be used to assess the population-level impact of the project.

Measurement of service quality

Indicators related to project quality can be divergent and depend on project type; below are some possible examples of metrics and methods that have been used to assess service quality:

Measurement of service quality – metrics

- Proportion of samples sent to laboratory with indeterminate results
- Microbiological diagnosis among notified cases
- DST rates
- Impact on treatment delays: The SQH project in Myanmar described earlier in this field guide calculated that the median total delay to treatment at the project clinics was 3.7 weeks (43), which was a significant reduction compared to several other studies on TB treatment delay that have reported median total delays ranging between 6 and 13 weeks.

Measurement of service quality – methods

- Use of standardized patients (also known as mystery clients) to assess the quality of service being offered to patients, including costs being incurred by the patient – this methodology has now been successfully used in India, Kenya, China and South Africa⁹
- Prescription audits
- Pathways to TB care studies
- Time and motion studies

Measurement of financial performance (specifically for social business models)

Social business models may need additional financial performance M&E to evaluate their long-term viability; examples of such indicators include:

- Annual revenues
- Break-even volumes
- Profit margins

Box 7 shows an example of the M&E indicators being tracked by the SEM project in Karachi (SZCs) described in section 3.1.

9. <https://www.qutubproject.org/for-more-information>

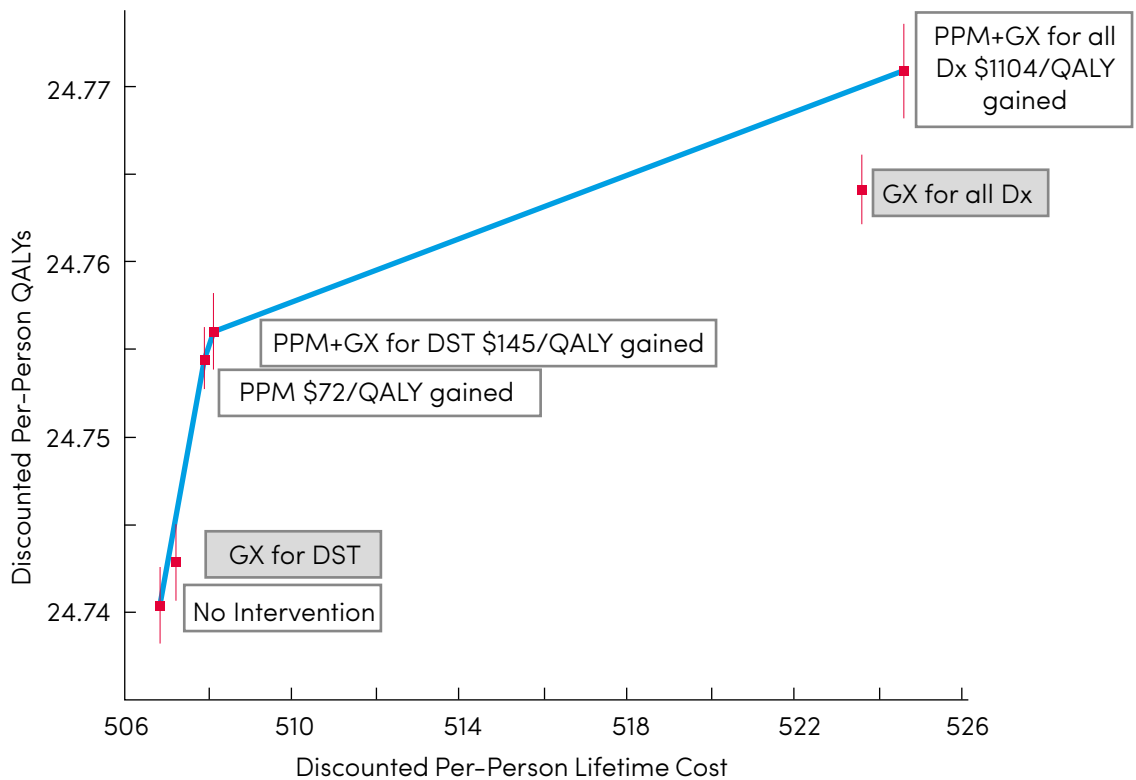
- Number of referral health care providers in the SZC partnership
- Number of TB presumptives tested
- Number of TB patients notified
- Number of TB patients linked to treatment
- Number of TB patients started on treatment that complete therapy
- Revenue generated (quarterly and annually)
- Number of new SZCs set up
- Number of TB screening camps organized
- Number of samples tested using GeneXpert
- Number of CXRs performed

Are private sector engagement models cost-effective?

On the one hand, there is general agreement that private sector engagement projects are important for ensuring quality of care for all TB patients. On the other hand, the investment commensurate to the need is not there. Over the years, most NTPs have earmarked less than 5% of their budget for private sector engagement projects. However, recently, many countries and donors have started investing in private sector engagement projects. In its new NSP, India has earmarked nearly 20% of the entire TB budget for activities to address the quality of care of patients managed in the private sector (75). One of the important questions often raised in the discussion of private sector engagement projects for TB care is: How cost-effective are they?

A study done to evaluate the incremental cost-effectiveness of engaging private practitioners to refer those with presumptive TB to public health centres in Jogjakarta, Indonesia showed that the incremental cost-effectiveness ratio per smear-positive case successfully treated through the private practitioner strategy was US\$ 351.66 (95% CI 322.84–601.33). On the basis of an acceptability curve using the NTP's willingness-to-pay threshold (US\$ 448.61), it was estimated that the probability of the private practitioner strategy being cost-effective was 66.8% (85).

A microsimulation model of TB in India, calibrated to demographic, epidemiological and care trends, to evaluate replacing microscopy and culture with Xpert MTB/RIF for all diagnoses and implementing PPM engagement nationwide clearly showed that PPM (assuming costs of \$38 per referral) was cost-effective. The study concluded that PPM should be prioritized over Xpert testing, as private sector engagement was more cost-effective than Xpert alone and, if sufficient resources were available, would substantially increase the value of Xpert if both interventions were implemented together.



Cost-Effectiveness Frontier

The efficient frontier shows strategies that are potentially cost-effective (those labelled in white boxes with incremental cost-effectiveness ratios). Dominated strategies are shown off the efficient frontier and labelled with gray boxes. Monte Carlo simulation sampling uncertainty for the costs and QALYs of each strategy is depicted as red 95% confidence intervals. PPM with Xpert testing is cost-effective (with an expected cost of US\$ 1,103.58 per QALY gained). Even with sampling noise, this finding occurs with 99% probability at a willingness-to-pay of India's per-capita GDP (US\$ 1,450). GX = GeneXpert and Dx = diagnosis (86).

A cost-effectiveness analysis of the UATBC Project in India showed US\$ 191 per DALY averted. Compared to the economic productivity per capita, the project was found to be very cost-effective.

Finally, it is clear that there are costs involved in every activity. In TB care, there are costs associated with diagnosis and treatment, patient support and follow-up, and programme management including training, supervision, logistics, M&E, etc. If the government or programmes do not pay, then the patients will have to pay.

When planning private sector engagement interventions, it would be very useful to incorporate a cost-effectiveness analysis, which will serve to further advocate for and promote the sustainability of the interventions.







5. POTENTIAL ISSUES
AND CHALLENGES
IN PRIVATE SECTOR
ENGAGEMENT

This section provides an overview of potential issues and challenges related to private sector engagement that are specific to:

- All private-sector providers;
- Specialists;
- Pharmacies;
- Laboratories;
- THPs.

5.1 Issues relevant to all private sector providers

Issue/Challenge	Possible Approaches
<p>TB is a source of stigma; providers may worry about their other “business” being threatened if they are recognized as TB experts.</p>	<ul style="list-style-type: none"> • Consider mapping and selecting GPs working in areas where a large number of TB cases are expected. • Include advocacy/media campaigns to address stigma issues (e.g. IRD’s media campaign in Pakistan, India’s media campaign to address stigma supported by celebrities like Mr. Amitabh Bachchan). • Connect providers to “community TB treatment providers” who can manage patients throughout the treatment course.
<p>Providers are concerned about possible “business losses” from NTP partnerships.</p>	<ul style="list-style-type: none"> • GPs need to be reassured that none of their patients will be “taken away” to the public sector. • Time away from the practice is lost revenue, so invitations to meetings/training workshops should be worthwhile (e.g. include CME credits, invitation to providers’ families, etc.) and time-efficient (i.e. shorter training only on necessary, practical skills and knowledge, rather than long, overly theoretical courses). • Accommodate private sector working hours (in many countries this means 5–10pm weekdays, weekends), which differ from those of public sector providers and NGOs • Enable GPs to expand TB services to areas they currently may not serve (e.g. maternal and child health services). • Ensure there is feedback on referred patients, so that providers know that their patients are getting the care they need. • For busy doctors, incentivize their clinic staff or assistants to perform some of the duties such as notification, or referral for testing.
<p>TB’s contribution to revenue is low and therefore GPs do not see value in engaging with NTPs; even from an insurance perspective, TB is perceived as a public sector issue rather than private sector one.</p>	<ul style="list-style-type: none"> • Base projects on solid market dynamics, especially on an understanding of incentives around testing/referral (e.g. smear microscopy vouchers are not a useful incentive given the low margins). • Consider including non-financial incentives (e.g. call centre support for GPs’ patients), and focus on removing barriers and annoyances rather than relying solely on incentives. • Increase premium payments to providers (e.g. PhilHealth TB benefit package currently offers to pay accredited TB DOTS centres 4,000 pesos [US\$ 75] for every patient diagnosed and treated via DOTS (32).
<p>Private doctors often do not follow guidelines (e.g. DOTS, NTP, WHO and ISTC) due to a combination of knowledge issues and patient preferences; this can lead to over/under-diagnosis, as well as suboptimal treatment outcomes.</p>	<ul style="list-style-type: none"> • Training should form a key component of all engagement approaches. • Include outcome monitoring and feedback in project design.

5.2 Issues specific to specialists

Issue/Challenge	Possible Approaches
Specialists are difficult to incentivize , even more so than GPs because their revenue streams are stronger.	<ul style="list-style-type: none"> • Incentives need to be crafted with the understanding that specialists are more likely to be motivated by non-financial incentives.
Specialists do not track long-term care or referral outcomes because they do not have the time or motivation to follow up with referred patients.	<ul style="list-style-type: none"> • Projects need to provide support in the form of patient follow-up.

5.3 Issues specific to pharmacies

Issue/Challenge	Possible Approaches
There may be large numbers of patient losses/dropouts from pharmacists to diagnostic centres.	Utilize innovative incentive structures (e.g. transport vouchers to patients, incentives to pharmacists for referrals, incentives for positive cases found).
Private pharmacies are unwilling to engage with NTPs and see it as a distraction from business.	Engage first with local Pharmacists Association leaders and get their buy-in. Engage with pharmacy chains to get their institutional buy-in.

5.4 Issues specific to specialists

Issue/Challenge	Possible Approaches
TB is not a good business opportunity for most private laboratories because it has very few high-margin tests; the money-making diagnostics are usually linked to chronic illnesses.	Utilize a cost-benefit analysis to build projects based on business models (e.g. a low-margin, high-volume strategy).
The private TB diagnostics market is very fragmented with multiple players in both formal and informal sectors; designing a large-scale intervention is very complicated.	Consider engaging with a few laboratories that have large network chains with wide reach; they are usually opinion leaders, and smaller laboratories will follow the market trends set by larger chains.

5.5 Issues specific to pharmacies

Issue/Challenge	Possible Approaches
Public health staff are often reluctant to collaborate with THPs and are mistrustful of THPs' practices.	The project design phase should include influential champions from public and private health spaces to create overall buy-in.
Linking THPs to the NTP is especially complex because of the informal nature of their work and limited understanding of referral systems.	Training and incentives should form key components of project structure.

Table 5.

Interpreting M&E indicators

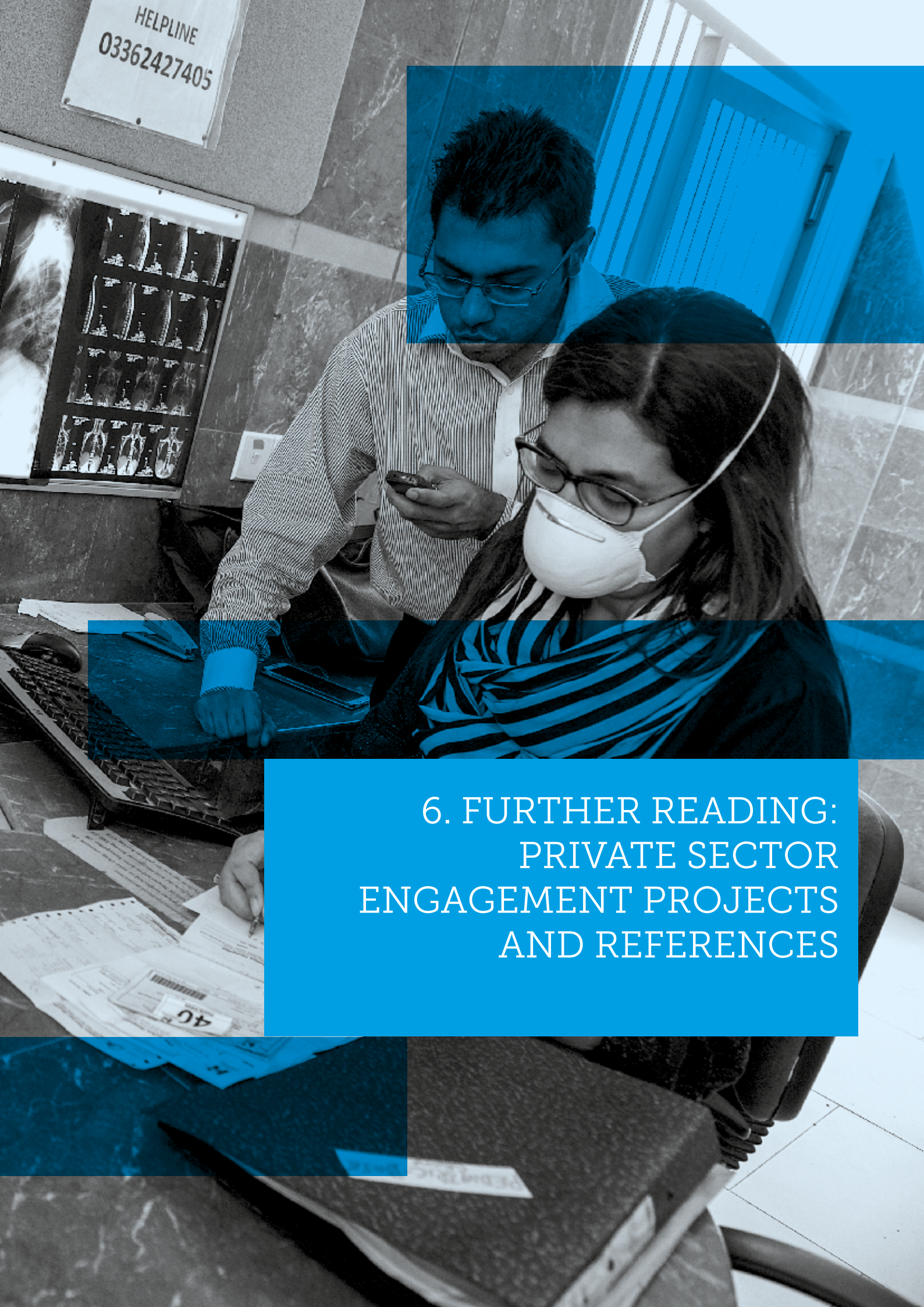
Proportion/ ratios	What to expect	Main considerations
Proportion of eligible index cases on whom contact investigation is based (B/A)	One should aim for high coverage to maximize the yield. Coverage of index cases varied widely from 2.8% to 91.7% in 19 interventions.	If the proportion is lower than expected, more effort should be made to motivate staff or a different modality should be chosen (e.g. interviewing index cases at diagnosis rather than later).
Number of contacts identified per index case (C/B)	Rarely more than five household contacts are included. Can add many more if other close contacts like neighbourhood contacts are included.	If the number of contacts is high, the definition of contacts may be too wide and the programme might consider restricting the definition of 'close contact'. DHS surveys or census reports are good sources for average household size.
Proportion of contacts screened (D/C)	The proportion of identified contacts who were screened ranged from 42.9% to 100%.	If the proportion of contacts screened is lower than expected, a different mode of engagement may be considered (e.g. home visits instead of invitation by the index case). The timing of home visits may not be optimal, or contacts may not have access to screening facilities or are reluctant to be screened; education may have to be implemented. See step 3.
Percentage of contacts who submitted a sputum sample for testing (E/D depending on algorithm per step)	This percentage ranged from 13.6% to 93.4%.	<ul style="list-style-type: none"> • If this percentage is too low, instructions for sputum collection may not be clear and/or sputum transport may be an issue. • If one chooses to test sputum of all contacts, regardless of having symptoms, this proportion is not relevant and the denominator should be changed to all screened contacts.
Proportion of contacts referred for CXR, undergoing CXR screening (E/D depending on algorithm per step)	Highly dependent on where CXR is placed. Nearly 100% in mobile outreach, but may be near 0 if patients need to go to a referral hospital.	Transport enablers or assistance of volunteers or health staff may be necessary to ensure that people receive CXR. If CXR is used only for B- people with persistent symptoms, no estimate may exist on how many are referred. One may instead calculate how many B- people have received CXR. If this is low, then this also gives an indication that B- TB might be missed.
Proportion of contacts who submitted sputum with B+ TB and with TB all forms (F/D)	Seldom more than 2.5 % for B+. This proportion is lower in active case finding compared to passive case finding; higher when using GeneXpert compared to microscopy; higher when using a more restrictive screening algorithm.	If too low, this may be because of issues with sputum quality, quality of laboratory services, or identification of contacts.

Proportion/ ratios	What to expect	Main considerations
Number needed to screen (number of contacts needed to be screened to find one case of tuberculosis) (D/F)	NNS varied from 16 to 316 for B+ TB; from 21 to 164 for all forms of TB.	Patients may drop out of the screening process, the diagnostic algorithm might need to be adapted, the contacts from index cases were diagnosed long ago, or rescreening is done too frequently. Close contacts defined are not at high risk.
Proportion of cases identified starting treatment (G/F)	LTFU at this stage should be minimal, although some cases may die before treatment initiation.	If people are not put on treatment, attention should be given to follow-up. Incentives may be considered for putting patients on treatment. Treatment shortages may play a role.
Proportion of cases who successfully completed treatment (H/G)	Should be at least the same as the regular TSR in the area and preferably at least 85%. Can only be estimated after minimum 6 months.	If too low, modalities like community DOT should be explored.
Proportion of cases identified through contact investigation among all notifications in the area	Ranging from under 1% to 14.1% of all cases notified in the intervention area having been identified through contact investigation, with a pooled estimate of 1.8%.	If this is low, the coverage of index cases may be too low. Percentage of contacts screened may be too low.
Proportion of contacts eligible for TPT who were put on treatment (J/I)	LTFU at this stage should be minimal.	If it is low, the protocols on TPT should be reviewed. Follow-up/staff training may be needed and/or medication stocks should be checked.
Proportion of contacts <5 years eligible for TPT who were put on treatment (L/K)	LTFU at this stage should be minimal.	If it is low, the protocols on TPT should be reviewed. Follow-up/staff training may be needed and/or medication stocks should be checked.

Besides looking at programme-specific indicators, it is worth evaluating whether and by how much the contact investigation activities have really increased case notifications. The proportion of cases identified through contact investigation among all notifications in the area does not really provide this perspective, as some of those cases would have been identified in the absence of the intervention. The M&E section of the introductory field guide gives more information on how to select an 'evaluation population' and a 'control population', and how to compare the baseline with the intervention period. As already mentioned in the 'what to expect' column of Table 5, the increase in notifications is usually modest (for B+ TB, <1% to max 15%).

Feedback

To ensure local use and real-time programme improvements, the M&E data should be shared with relevant stakeholders and people involved in the screening. They may know how to improve the impact of the intervention based on this real-time feedback. Comparison between regions can also be made, and successful regions can share experiences and examples of how they reached their targets. Other regions can share challenges. Feedback to implementers is best given frequently or even continuously via online resources. Regular meeting can be organized to discuss the interpretation and plan for adjustments in the strategy. More comprehensive reports for non-implementing stakeholders can be organized periodically.



6. FURTHER READING:
PRIVATE SECTOR
ENGAGEMENT PROJECTS
AND REFERENCES

Some project examples and publications have been described throughout this field guide, with references indicated for further reading. Additional publications that might provide useful context around private sector engagements are listed below:

1. The Association of Social Franchising for Health (ASFH) is a USAID-funded network of Kenya's six leading social franchisee partners. The network's objective is to share best practices related to social franchising, which has been recognized in Kenya as an effective approach to rapidly expand health care access for marginalized communities: [Association of Social Franchising for Health](#)
2. A TB Reach Wave 1 project with Catholic Relief Services (CRS) in Democratic Republic of the Congo (DRC) in which traditional healers worked with CRS to screen TB patients among high-risk groups, leading to dramatic increases in case detection: [TB REACH flyer about the project](#)
3. Lönnroth et al. performed a comparative analysis of four PPM projects (New Delhi, Ho Chi Minh city, Nairobi and Kenya) in 2004: [Public-private mix for DOTS implementation: What makes it work?](#)
4. Lei Xun et al. performed a systematic review of 78 global PPM approaches in 2014: [Public-private mix for tuberculosis care and control: a systematic review](#)
5. In 2007, WHO and stakeholders developed a guide for PPM national situation assessment (NSA), which allows a review of private provider engagement: [Public-private mix for TB care and control: a tool for national situation assessment](#)
6. A 2015 paper by Wells, Pai and Uplekar on the role of and operational issues around private sector engagement in TB care and prevention in Asia: [Achieving systemic and scalable private sector engagement in tuberculosis care and prevention in Asia](#)
7. A 2016 analysis of the global progress and prospects of expanding PPM for TB care and prevention by Uplekar: [Public-private mix for TB care and prevention: what progress? what prospects?](#)
8. The most recent (2017) WHO guide on PPM planning at national scale: [Guide to develop a national action plan on public-private mix \(PPM\) for TB prevention and care](#)
9. The School of Pharmacy (University of London) performed a systematic review of 18 studies to assess the role of private pharmacies in public health: [Private local pharmacies in low- and middle-income countries: a review of interventions to enhance their role in public health](#)
10. [Universal Access to TB Care: concurrent assessment report](#)

References

1. Uplekar M, Juvekar S, Morankar S, Rangan S, Nunn P. Tuberculosis patients and practitioners in private clinics in India. *Int J Tuberc Lung Dis.* 1998;2(4):324–9.
2. Wells WA. Onions and prevalence surveys: how to analyze and quantify tuberculosis case-finding gaps. *Int J Tuberc Lung Dis.* 2017;21(11):1101–13. doi:10.5588/ijtld.17.0271
3. Ministry of Health, Republic of Indonesia. Indonesia tuberculosis prevalence survey, 2013–2014.
4. Khan AJ, Khowaja S, Khan FS, Qazi F, Lotia I, Habib I, et al. Engaging the private sector to increase tuberculosis case detection: an impact evaluation study. *Lancet Infect Dis.* 2012;12(8):608–16. doi:10.1016/S1473-3099(12)70116-0
5. The Joint External TB Monitoring Mission (JEMM TB) Indonesia 2017. Jakarta: Ministry of Health Indonesia; 2017. Available from: http://www.searo.who.int/indonesia/topics/tb/tuberculosis_jemm_2017_for_ino_website.pdf
6. Solow R, Stroman T, Utama E, Gunawan S, Tophof N, Bramantyo N, et al. Engaging private providers to improve TB outcomes in Indonesia. Washington, DC: USAID; 2018. Available from: https://pdf.usaid.gov/pdf_docs/PA00SWQD.pdf
7. Wells WA, Uplekar M, Pai M. Achieving systemic and scalable private sector engagement in tuberculosis care and prevention in Asia. *PLoS Med.* 2015;12(6):e1001842. doi:10.1371/journal.pmed.1001842
8. Arinaminpathy N, Batra D, Khaparde S, Vualnam T, Maheshwari N, Sharma L, et al. The number of privately treated tuberculosis cases in India: an estimation from drug sales data. *Lancet Infect Dis.* 2016;16(11):1255–60. doi:10.1016/S1473-3099(16)30259-6
9. Strengthening Health Outcomes through the Private Sector (SHOPS) project. Malawi private health sector assessment. Washington, DC: USAID; 2011. Available from: <https://banyanglobal.com/wp-content/uploads/2017/05/Malawi-Private-Health-Sector-Assessment.pdf>
10. Anuradha B, Aparna S, Hari Sai Priya V, Vijaya Lakshmi V, Akbar Y, Suman Latha G, et al. Prevalence of drug resistance under the DOTS strategy in Hyderabad, South India, 2001–2003. *Int J Tuberc Lung Dis.* 2006;10(1):58–62.
11. Floyd K, Arora VK, Murthy KJ, Lönnroth K, Singla N, Akbar Y, et al. Cost and cost-effectiveness of PPM-DOTS for tuberculosis control: evidence from India. *Bull World Health Organ.* 2006;84(6):437–45.
12. Munsiff SS, Ahuja SD, Li J, Driver CR. Public–private collaboration for multidrug-resistant tuberculosis control in New York City. *Int J Tuberc Lung Dis.* 2006;10(6):639–48.
13. Uplekar M. Public–private mix for tuberculosis care and prevention. What progress? What prospects? *Int J Tuberc Lung Dis.* 2016;20(11):1424–9.
14. Stop TB Partnership, World Health Organization. Engaging all health care providers in TB control: guidance on implementing public–private mix approaches. Geneva: World Health Organization; 2006 (WHO/HTM/TB/2006.360). Available from: http://www.who.int/tb/publications/2006/who_htm_tb_2006_360/en/
15. Public–private mix for TB care and control: a toolkit. Geneva: World Health Organization; 2010 (WHO/HTM/TB/2010.12). Available from: <http://www.who.int/tb/publications/tb-publicprivate-toolkit/en/>

16. Public–private mix for TB care and control: a tool for national situation assessment. Geneva: World Health Organization; 2007 (WHO/HTM/TB/2007.391). Available from: http://www.who.int/tb/publications/who_htm_tb_2007_391/en/
17. World Health Organization, USAID. Guide to develop a national action plan on public–private mix for tuberculosis prevention and care. Geneva: World Health Organization; 2017. Available from: <http://www.who.int/tb/publications/2017/PPMAAction-PlanGuide/en/>
18. Lönnroth K, Tran TU, Thuong LM, Quy HT, Diwan V. Can I afford free treatment? Perceived consequences of health care provider choices among people with tuberculosis in Ho Chi Minh City, Vietnam. *Soc Sci Med*. 2001;52(6):935–48.
19. Malmborg R, Mann G, Thomson R, Squire SB. Can public–private collaboration promote tuberculosis case detection among the poor and vulnerable? *Bull World Health Organ*. 2006;84(9):752–8.
20. Van't Hoog AH, Marston BJ, Ayisi JG, Agaya JA, Muhenje O, Odeny LO, et al. Risk factors for inadequate TB case finding in Rural Western Kenya: a comparison of actively and passively identified TB patients. *PLoS ONE*. 2013;8(4):e61162. doi:10.1371/journal.pone.0061162
21. Ngadaya ES, Mfinanga GS, Wandwalo ER, Morkve O. Pulmonary tuberculosis among women with cough attending clinics for family planning and maternal and child health in Dar Es Salaam, Tanzania. *BMC Public Health*. 2009;9:278. doi:10.1186/1471-2458-9-278
22. Chin DP, Hanson CL. Finding the missing tuberculosis patients. *J Infect Dis*. 2017;216(Suppl 7):S675–8. doi:10.1093/infdis/jix368
23. Cazabon D, Alsdurf H, Satyanarayana S, Nathavitharana R, Subbaraman R, Daftary A, et al. Quality of tuberculosis care in high burden countries: the urgent need to address gaps in the care cascade. *Int J Infect Dis*. 2017;56:111–6. doi:10.1016/j.ijid.2016.10.016
24. Satyanarayana S, Kwan A, Daniels B, Subbaraman R, McDowell A, Bergkvist S, et al. Use of standardised patients to assess antibiotic dispensing for tuberculosis by pharmacies in urban India: a cross-sectional study. *Lancet Infect Dis*. 2016;16(11):1261–8. doi:10.1016/S1473-3099(16)30215-8
25. Das J, Kwan A, Daniels B, Satyanarayana S, Subbaraman R, Bergkvist S, et al. Use of standardised patients to assess quality of tuberculosis care: a pilot, cross-sectional study. *Lancet Infect Dis*. 2015;15(11):1305–13. doi:10.1016/S1573-3099(15)00077-8
26. Assessing tuberculosis under-reporting through inventory studies. Geneva: World Health Organization; 2012 (WHO/HTM/TB/2012.2). Available from: http://www.who.int/tb/publications/inventory_studies/en/
27. Strengthening Health Outcomes through the Private Sector (SHOPS) project. Final report 2009–2016. Washington, DC: USAID; 2016. Available from: <https://www.shop-plusproject.org/node/17993>
28. Lönnroth K, Uplekar M, Blanc L. Hard gains through soft contracts: productive engagement of private providers in tuberculosis control. *Bull World Health Organ*. 2006;84(11):876–83.
29. Dewan PK, Lal SS, Lönnroth K, Wares F, Uplekar M, Sahu S, et al. Improving tuberculosis control through public–private collaboration in India: literature review. *BMJ*. 2006;332(7541):574–8.

30. Irawati SR, Basri C, Arias MS, Prihatini S, Pintiswati N, Voskens J, et al. Hospital DOTS linkage in Indonesia: a model for DOTS expansion into government and private hospitals. *Int J Tuberc Lung Dis.* 2007;11(1):33–9.
31. Sisodia RS, Wares DF, Sahu S, Chauhan LS, Zignol M. Source of retreatment cases under the revised national TB control programme in Rajasthan, India, 2003. *Int J Tuberc Lung Dis.* 2006;10(12):1373–9.
32. Kraff A, Tan C, Quimbo S, Capuno J, Yap E, Cabaraban M, et al. Private provider survey. Final report of a project of the Philippine Tuberculosis Initiatives for the Private Sector. Quezon City: UPecon Foundation; 2005.
33. Auer C, Sarol J Jr, Tanner M, Weiss M. Health seeking and perceived causes of tuberculosis among patients in Manila, Philippines. *Trop Med Int Health.* 2000;5(9):648–56.
34. Gidardo M, Ejembi CL. Tuberculosis case management and treatment outcome: assessment of the effectiveness of public–private mix of tuberculosis programme in Kaduna State, Nigeria. *Ann Afr Med.* 2009;8(1):25–31.
35. Innovations and Multi-sectoral Partnerships to Achieve Control of TB (IMPACT). Fact sheet [website]. Washington, DC: USAID; 2016. Available from: <https://www.usaid.gov/philippines/health/impact>
36. Department of Health Republic of the Philippines, USAID, Philippine Business for Social Progress. IMPACT interim project report. Available from: http://www.lcp.org.ph/UserFiles/League_of_Cities/file/ncr-03.pdf
37. Challenge TB. Notification through WiFi TB application for private providers: update and expansion plan. Washington, DC: USAID. Available from: https://pdf.usaid.gov/pdf_docs/PA00SWTN.pdf
38. Uganda: Public private partnerships with 100 private clinics through SPARK TB Project in Kampala [website]. Paris: International Union Against Tuberculosis and Lung Disease. Available from: <https://www.theunion.org/what-we-do/technical-assistance/tuberculosis-and-mdr-tb/tb-reach/uganda>
39. Smith E. Social franchising reproductive health services: can it work? A review of the experience. London: Marie Stopes International; 2002. Available from: <http://www.eldis.org/document/A16310>
40. Montagu D, Goodman C. Prohibit, constrain, encourage, or purchase: how should we engage with the private health-care sector? *Lancet.* 2016;388(10044):613–21. doi:10.1016/S0140-6736(16)30242-2
41. Myanmar strategic purchasing brief series #1: package of services. Washington, DC: Population Services International; 2017. Available from: <https://www.psi.org/publication/myanmar-uhc-brief-series-1/>
42. Population Services International Kenya: Tunza and Huduma Poa Clinics improving TB case finding in Nyanza, Kenya. Geneva: Stop TB Partnership; 2015. Available from: [http://www.stoptb.org/assets/documents/global/awards/tbreach/w4docs/Population%20Services%20International%20\(PSI\)%20Kenya.pdf](http://www.stoptb.org/assets/documents/global/awards/tbreach/w4docs/Population%20Services%20International%20(PSI)%20Kenya.pdf)
43. Lönnroth K, Aung T, Maung W, Kluge H, Uplekar M. Social franchising of TB care through private GPs in Myanmar: an assessment of treatment results, access, equity and financial protection. *Health Policy Plan.* 2007;22(3):156–66.

44. Interactive Research and Development (IRD) Pakistan. Geneva: Stop TB Partnership. Available from: <http://www.stoptb.org/assets/documents/global/awards/tbreach/w3docs/INTERACTIVE%20RESEARCH%20AND%20DEVELOPMENT%20Pakistan.pdf>
45. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). Geneva: Stop TB Partnership. Available from: <http://www.stoptb.org/assets/documents/global/awards/tbreach/w3docs/ICDDR,B%20Bangladesh.pdf>
46. Banu S. Social enterprise model for increased tuberculosis case detection in the private sector of Dhaka, Bangladesh. Paper presented at 47th World Conference on Lung Health of the International Union Against Tuberculosis and Lung Disease (The Union), Liverpool, United Kingdom, 2016. Available from: https://www.researchgate.net/publication/312194004_Social_enterprise_model_for_increased_tuberculosis_case_detection_in_the_private_sector_of_Dhaka_Bangladesh
47. Berman P, Cuizon D. Multiple public–private jobholding of health care providers in developing countries: an exploration of theory and evidence. London: Department for International Development Health Resource Centre; 2004. <https://www.hrresourcecenter.org/node/270.html>
48. Stratis A, Kingfield J. Using mHealth technology to battle India’s tuberculosis epidemic. New Delhi: World Health Partners; 2013. Available from: <http://worldhealthpartners.org/2013/11/using-mhealth-technology-to-battle-indias-tuberculosis-epidemic/>
49. World Health Partners: Harnessing technology to provide preventive health services to underserved communities. Silicon India Magazine, September 2017. Available from: <https://healthcare.siliconindiamagazine.com/vendor/world-health-partners-harnessing-technology-to-provide-preventive-health-services-to-underserved-communities--cid-3268.html>
50. Rajeswari R, Balasubramanian R, Bose MS, Sekar L, Rahman F. Private pharmacies in tuberculosis control: a neglected link. *Int J Tuberc Lung Dis.* 2002;6(2):171–3.
51. Konduri N, Delmotte E, Rutta E. Engagement of the private pharmaceutical sector for TB control: rhetoric or reality? *J Pharm Policy Pract.* 2017;10:6. doi:10.1186/s40545-016-0093-3
52. Diagnostic and treatment delay in tuberculosis. Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2006. Available from: <http://www.who.int/iris/handle/10665/116501>
53. Auer C. Public–private mix DOTS in Pakistan: an assessment (report of a public–private mix TB DOTS mission commissioned by WHO EMRO, 19 August–9 September 2008). Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2008.
54. Rojpibulstit M, Kajanakiritamrong J, Chongsuvivatwong V. Patient and health system delays in the diagnosis of tuberculosis in Southern Thailand after health care reform. *Int J Tuberc Lung Dis.* 2006;10(4):422–8.
55. Daftary A, Jha N, Pai M. Enhancing the role of pharmacists in the cascade of tuberculosis care. *J Epidemiol Glob Health.* 2017;7(1):1–4. doi:10.1016/j.jegh.05.001
56. Mihalea H, Richardson D. Public–private mix involving pharmacies and other providers in TB control: a Cambodia case study. Seattle, WA: PATH; 2011. Available from: <https://www.path.org/resources/public-private-mix-involving-pharmacies-and-other-providers-in-tb-control-a-cambodia-case-study/>

57. Creating champions of change: enrolling community pharmacists in a national tuberculosis control initiative. Geneva: Lilly MDR-TB Partnership; 2014. Available from: <https://lillypad.lilly.com/WP/wp-content/uploads/Creating-Champions-of-Change.pdf>
58. Lambert ML, Delgado R, Michaux G, Vols A, Speybroeck N, Van der Stuyff P. Collaboration between private pharmacies and national tuberculosis programme: an intervention in Bolivia. *Trop Med Int Health*. 2005;10(3):246–50.
59. KNCV Tuberculosis Foundation annual report 2017. The Hague: KNCV Tuberculosis Foundation; 2017. Available from: https://www.kncvtbc.org/uploaded/2018/06/TBC1829_AnnualReport_2017_DEF3.pdf
60. Hossain S, Zaman K, Quaiyum A, Banu S, Husain A, Islam A, et al. Care seeking in tuberculosis: results from a countrywide cluster randomised survey in Bangladesh. *BMJ Open*. 2014;4(5):e004766. doi:10.1136/bmjopen-2013-004766
61. Khan MS, Salve S, Porter JDH. Engaging for-profit providers in TB control: lessons learnt from initiatives in South Asia. *Health Policy Plan*. 2015;30(10):1289–95. doi:10.1093/heapol/czu137
62. Qin ZZ, Pai M, Van Gemert W, Sahu S, Ghiasi M, Creswell J. How is Xpert MTB/RIF being implemented in 22 high tuberculosis burden countries? *Eur Respir J*. 2015;45(2):549–5. doi:10.1183/09031936.00147714
63. Puri L, Oghor C, Denkinger CM, Pai M. Xpert MTB/RIF for tuberculosis testing: access and price in highly privatised health markets. *Lancet Glob Health*. 2016;4(2):e94–5. doi:10.1016/S2214-109X(15)00269-7
64. Ponnudurai N, Denkinger CM, Van Gemert W, Madhukar P. New TB tools need to be affordable in the private sector: the case study of Xpert MTB/RIF. *J Epidemiol Glob Health*. 2018. doi:10.1016/j.jegh.2018.04.005
65. Initiative for Promoting Affordable Quality TB Tests (IPAQT) [Presentation]. Geneva: World Health Organization; 2013. Available from: <http://www.who.int/tb/careproviders/ppm/IPAQT.pdf>
66. Case study: catalyzing the market for accurate tuberculosis testing in India's extensive private sector through IPAQT. Boston, MA: Clinton Health Access Initiative; 2016. Available from: <https://clintonhealthaccess.org/content/uploads/2016/06/Case-Study-India-IPAQT-June-2016.pdf>
67. Mbatha T, Thamaga S. Linking traditional health practitioners with public health facilities in Limpopo Province to strengthen TB case management: a baseline survey report. Pretoria: University Research Co., LLC; 2013.
68. USAID Tuberculosis Program South Africa: final report 2009–2015. Pretoria: University Research Co., LLC; 2016. Available from: https://pdf.usaid.gov/pdf_docs/PA00KHMx.pdf
69. Key populations brief: rural populations. Geneva: Stop TB Partnership; 2017. http://www.stoptb.org/assets/documents/resources/publications/acsm/KPBrief_RuralPopulations_ENG_WEB.pdf
70. Kaboru BB. Active referral: an innovative approach to engaging traditional health-care providers in TB control in Burkina Faso. *Healthc Policy*. 2013;9(2):51–64.
71. Project Axshya activity report 2014–2015. Paris: International Union Against Tuberculosis and Lung Disease; 2016. Available from: http://axshya-theunion.org/wp-content/uploads/2016/07/AXSHYA_WEBversion_singles.pdf

72. Hamid Salim MA, Uplekar M, Daru P, Aung M, Declercq E, Lönnroth K. Turning liabilities into resources: informal village doctors and tuberculosis control in Bangladesh. *Bull World Health Organ.* 2006;84(6):479–84.
73. GraminSamajKalyanVikasManch (GSKVM) India. Geneva: Stop TB Partnership. Available from: <http://www.stoptb.org/assets/documents/global/awards/tbreach/w3docs/GRAMIN%20SAMAJ%20KALYAN%20VIKAS%20MANCH%20India.pdf>
74. National TB Control Program. Bangladesh. Tuberculosis Control in Bangladesh, Annual Report. 2017. http://ntp.gov.bd/ntp_dashboard/magazines_image/Annual%20Report-2017.pdf
75. National Strategic Plan for Tuberculosis Elimination 2017–2025. New Delhi: Revised National Tuberculosis Control Programme; 2017. Available from: <https://tbcindia.gov.in/WriteReadData/NSP%20Draft%2020.02.2017%201.pdf>
76. Piryani RM, Kohli SC, Shrestha G, Rawat T. Tuberculosis diagnosed/managed at NGMC, Teaching Hospital, Kohalpur: a joint private–public effort. *Kathmandu Univ Med J (KUMJ).* 2008;6(1):28–32.
77. Nair B. dna special: Railways’ massive medical arm underutilised, say doctors. *DNA India*; 2016. Available from: <https://www.dnaindia.com/mumbai/report-dna-special-railways-massive-medical-arm-underutilised-say-doctors-2221033>
78. Quelapio MI, Mira NR, Orillaza-Chi RB, Belen V, Munez N, Belchez R, et al. Responding to the multidrug-resistant tuberculosis crisis: mainstreaming programmatic management to the Philippine National Tuberculosis Programme. *Int J Tuberc Lung Dis.* 2010;14(6):751–7.
79. Mantala MJ. Public–private mix DOTS in the Philippines. *Tuberculosis (Edinb).* 2003;83(1–3):173–6.
80. Ardian M, Meokbun E, Siburian L, Malonda E, Waramori G, Penttinen P, et al. A public–private partnership for TB control in Timika, Papua Province, Indonesia. *Int J Tuberc Lung Dis.* 2007;11(10):1101–7.
81. Improving tuberculosis services in Mumbai: PATH connects with private providers to improve TB care for urban populations at high risk. Mumbai: PATH; 2016. Available from: https://path.azureedge.net/media/documents/ID_india_ppia_fs_r1.pdf
82. EQUALTIPS program [website]. Nairobi: The Kenya Association for the Prevention of Tuberculosis and Lung Diseases. Available from: <http://www.kaptld.or.ke/component/content/?start=5>
83. Dowdy DW, Lotia I, Azman AS, Creswell J, Sahu S, Khan AJ. Population-level impact of active tuberculosis case finding in an Asian megacity. *PLoS ONE.* 2013;8(10):e77517. doi:10.1371/journal.pone.0077517
84. Barr DA. Ethics in public health research: a research protocol to evaluate the effectiveness of public–private partnerships as a means to improve health and welfare systems worldwide. *Am J Public Health.* 2007;97(1):19–25.
85. Mahendradhata Y, Probandari A, Ahmad RA, Utarini A, Trisnantoro L, Lindholm L, et al. The incremental cost-effectiveness of engaging private practitioners to refer tuberculosis suspects to DOTS services in Jogjakarta, Indonesia. *Am J Trop Med Hyg.* 2010;82(3):1131–9. doi:10.4269/ajtmh.2010.09-0447
86. Suen SC, Bendavid E, Goldhaber-Fiebert JD. Cost-effectiveness of improvements in diagnosis and treatment accessibility for tuberculosis control in India. *Int J Tuberc Lung Dis.* 2015;19(9):1115–24. doi:10.5588/ijtld.15.0158

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