

SUSTAINING PPM-DOTS: THE CASE OF PIMPRI CHINCHWAD, MAHARASHTRA, INDIA

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Summary

Background: Globally, Public-Private Mix (PPM) models of service delivery are recommended as a strategy for improving tuberculosis (TB) control. Several models of PPM-DOTS have been initiated under the Revised National TB Control Programme (RNTCP) in India, but scaling up and sustaining successful projects has remained a challenge.

Aim: This paper examines factors accounting for the sustainability of a PPM-DOTS initiated in 1998 in Pimpri Chinchwad (PC), a city in Maharashtra, India.

Methods: A two-year intervention research project documented the workings of the PPM-DOTS programme. This paper draws on in-depth interviews with programme officers and staff, and semi-structured interviews with private practitioners (PP) practising in the study area.

Results: PPM-DOTS was originally introduced in PC, in order to increase access to DOTS. Over the years it has become an integral part of the RNTCP. Multiple approaches were employed to involve and sustain private providers' participation in PPM-DOTS. Systems were developed for supervision and monitoring DOTS in the private sector. Systematic use of operations research and successful mobilisation of available local resources helped set future direction for expanding and strengthening the PPM. The private sector's contribution to case detection and treatment success has increased, however ensuring referrals of TB suspects from all private providers continues to present a challenge.

Conclusion: PPM-DOTS in PC is one of the few Indian models implemented as envisaged by global and national policy makers. Its successful operation for over a decade reiterates the importance of public sector initiative and leadership and makes it an interesting case for study and replication. [*Indian J Tuberc* 2011; 58: 18-28]

Key words: PPM-DOTS, Sustainability, India

INTRODUCTION

Public-Private Mix (PPM), a strategy for optimising the strengths of both public and private sectors in health care delivery, has been implemented for tuberculosis (TB) control. It is regarded as a model that could be adapted to other disease control programmes^{1,2,3}. However, the contribution of PPM to TB control, its scaling up and sustainability as a health systems strategy is debatable⁴. Specifically, integration of PPM-DOTS into the public health system has proven challenging⁵.

We present the case of PPM-DOTS in Pimpri Chinchwad (PC) a city in Western Maharashtra, India. PPM was initiated in PC in 1998, and has been sustained for over a decade exclusively with resources from the Revised National TB Control Programme (RNTCP). We discuss its sustainability using six evaluation criteria that have been proposed in the literature on PPM-DOTS^{3,6} - (1) Initiation of PPM; (2) Clarity about roles and responsibilities of partners; (3) Supervision and monitoring; (4) Efforts at ensuring sustainability; (5) Evaluation based on case detection and cure rates and; (6) Challenges in expansion and sustainability.

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STUDY SETTING

With a population of 1.01 million (Census 2001), PC is the seventh largest city in Maharashtra, covering an area of 171 sq km. Over the past decade, the city has seen a population growth of 95%⁷.

The health infrastructure in PC is typical of urban India. The public sector with eight municipal hospitals (one super speciality 600-bedded hospital, two multi-diagnostic centres, and five maternity hospitals) and 15 municipal dispensaries co-exists with a vast private sector that serves as the first provider contact for 83% of new sputum positive patients⁸. In 2006, AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha, Homeopathy) practitioners accounted for 88% of private practitioners (PP) in PC⁹. The City TB Centre (CTC) initiated PPM with the introduction of the RNTCP in 1998, and currently PC has over 250 Directly Observed Treatment (DOT) centres in the private sector¹⁰.

METHODS

This paper is based on primary quantitative and qualitative data and secondary data from the RNTCP, gathered in the course of an intervention research project conducted between 2006 and 2008. Specifically, we draw on in-depth interviews with three programme officers [including the City TB Officer (CTO) who initiated the PPM, the CTO who succeeded him and a Medical Officer (MO) of a TB Unit], and eight TB health visitors (TB HV); semi-structured interviews with 497 PPs (164 DOT provider PPs and 333 PPs not providing DOTS) conducted as part of the baseline survey; and semi-structured interviews with 19 PPs (14 DOT provider PPs and five PPs not providing DOTS) who had participated in one of the pilot interventions. The in-depth interviews explored the respondents' perspectives on PPM-DOTS, and the semi-structured interviews with PPs documented their practices and experiences with PPM-DOTS, including communication with the RNTCP. Quantitative data from semi-structured interviews were analysed using SPSS, version 16 (SPSS Inc.,

Chicago IL). Qualitative data from in-depth interviews were analysed thematically.

RESULTS

Initiation of PPM-DOTS in PC

Involvement of PPs: The CTC introduced PPM to enhance patients' access to TB care in response to the RNTCP's mandate to provide DOT within two kilometres of a patient's residence. Initially, programme officers, Senior Treatment Supervisors (STS) and Senior TB Laboratory Supervisors (STLS) approached PPs in peripheral areas of the city that had inadequate public sector health care facilities. The CTC also advertised through local newspapers inviting PPs to undergo training and become DOT providers.

Over the years, the CTC recognised the need for regular liaising with the PPs to ensure their involvement in PPM-DOTS. With the increase in the number of PPs, it assigned TB HVs – a cadre of outreach workers introduced in 2003 by the Central TB Division for urban areas primarily for address verification and defaulter retrieval through home visits – the task of approaching existing DOT provider PPs and requesting other PPs to participate in PPM-DOTS or to refer their TB suspects/ patients to the RNTCP. Subsequently, continuing medical education (CME) sessions on PPM-DOTS were organised for recruited PPs.

Over the years the programme has engaged almost a fifth of the PPs from PC as DOT providers. The proportion of DOT providers among non-allopaths (34%, 150/437) was higher than among allopaths (23%, 14/60) (Chi square, $p=0.090$)⁹. PPs reported multiple motives for their participation as DOT providers. Seventeen percent (28/164) said that their practice would gain from their participation. Of these, almost all (27/28) were trained in AYUSH systems of medicine and about half (12/28) had set up practice in the last five years. More than two-thirds (68%, 111/164) regarded PPM as a way of contributing to society and 56% (92/164) reported their participation would benefit their patients.

Several reasons were attributed to the difference in the participation of allopaths and non-allopaths in PPM-DOTS. The former CTO felt that allopathic PPs were less likely to refer a TB patient to the public sector because they were trained in TB management at the MBBS level. However, for non-allopaths, PPM represented an opportunity to become familiar with 'modern' TB management practices.

"...[PPM training] was informative especially for non-allopaths. They were inquisitive. Also because of the training, they could give complete TB treatment to their patients....they got to know the protocol." (MO, TB Unit)

Involvement of other partners: Although the RNTCP in PC has focused on PPs as partners in the PPM, it has also reached out to other sector providers. Over the years, the CTC has involved nine NGOs, two corporate health facilities, five private pathology laboratories, one private medical college with a tertiary hospital and the State Insurance Hospital in PPM-DOTS. Community volunteers, especially members of women's small savings groups and women health workers under the government's Integrated Child Development Scheme (*anganwadi* workers) have also been involved as DOT providers. As with PPs, the main criteria for selection of other partners were location and ability to provide easy access to DOTS. The process gained momentum after the PPM guidelines were issued by the Government of India¹¹⁻¹³.

Incentives: In PC, the programme officers' views and the programme's experiences with incentives are mixed. Involvement of PPs steadily increased in the initial years even in the absence of incentives. According to the programme officers, incentives introduced in 2006 by the RNTCP did not influence motivation for participation in PPM-DOTS too much.

".....They (PPs) know that there is a [incentive] scheme now. Initially there was no scheme so they did not ask, but when

the scheme was declared people (PPs) started asking... For 30% (participating PPs), it is motivation and for 70% it is not. That is my observation" (Former CTO)

The former CTO also noted that the small proportion of PPs who find incentives important are *"... the people who have an 'average level' of practice,.... I remember Dr. X from Y. He used to treat so many patients. He refused the money. He said 'I don't need it.'"*

The CTO felt that although the incentives were useful in motivating few PPs, the programme's approach towards the partners was more important for ensuring partnership. He believed that incentives should be paid as a measure of increasing accountability:

"Incentives alone will not work...incentives are for few people but motivation, encouragement and leadership [by the programme] are important. You give them the incentives [and say] '...utilize this for the phone calls, for mobile calls, for water for the patients. It is not [intended] as a profit-making [mechanism]. This should be utilized for the poor patients. Certainly this should work...[If] we give incentives then we can ask them for more returns."(CTO)

Clarity about roles and responsibilities

According to the 2002 PPM policy, DOT provider PPs were expected to give DOT, mark treatment cards, inform programme representatives regarding missed doses within a stipulated time period, and refer patients for follow-up sputum examinations¹⁴. When assessed using these guidelines, a wide variation was seen in PPs' commitment levels as well as the quality of DOT at DOT provider PPs' clinics.

On the one hand, programme staff and MOs reported of DOT provider PPs, who successfully managed confirmatory and retrieval visits and marked all cards independently. On the other hand, there were PPs whose commitment to

the programme, as the CTO put it, did not translate “into taking on more responsibility towards the patients” including the administrative work involved in DOTS.

“Practitioners do not want to have that much paper work. Tick marking on cards does not take much time but the attitude of PPs should be that treatment cards are essential as it ensures that patients are taking regular treatment...” (CTO)

The programme officers’ observation was reflected in the survey findings which showed that at seven percent (12/162) PP DOT centres their clinic staff supervised DOT; and in 12% (20/162) treatment cards were maintained by these staff or the RNTCP staff. Twenty-eight percent (46/162) and 36% (58/162) of the DOT provider PPs reported handing over more than one blister pack to a patient in a single visit in the intensive and continuation phases respectively. One-tenth (10%, 15/157) of the DOT provider PPs further reported not taking any action in case a patient missed doses (Table 1).

Table 1: Quality of DOT in private sector

Indicators	DOT provider PPs Number (%)
Observation of DOT	n=162*
PP	129 (79)
PP or PP’s Assistant or PP’s Staff	19 (12)
PP’s Staff only	12 (7)
Not observed	1 (1)
Not asked	1 (1)
Maintenance of Treatment cards	n=162*
PP	137 (84)
Staff at PPs’ clinic	13 (8)
PP / PP’s Staff / PP’s Assistant	5 (3)
RNTCP staff (always / sometimes)	7 (4)
Number of blister packs given to the patient at a time – Intensive Phase	n=162*
One (either observed being taken at the clinic, or allowed to take at home)	114 (70)
More than one (often / sometimes / rarely)	46 (28)
Can’t say / No response	2 (2)
Number of blister packs given to the patient at a time – Continuation Phase	n=162*
One	101 (62)
More than one (often / sometimes / rarely)	58 (36)
Can’t say / No response	3 (2)
Action taken if patient misses a dose[#]	n=157[^]
PP visits patient	17 (11)
PP tries to contact patient through an acquaintance or over telephone	69 (44)
No action taken	15 (10)
PP informs RNTCP ^β	102 (65)
No patient has missed a dose	17 (11)
*2 of 164 participating DOT provider PPs interviewed for the survey had not provided DOT after they received training and were excluded from the present analysis	
[#] Multiple response	
[^] Valid responses only	
^β Duration within which PP informs RNTCP not available	

The former CTO attributed complacency among DOT provider PPs to their confidence that TB HVs would take care of the records and patients. The PPs' inability to comprehend the gravity of the assigned tasks and their submission to patient pressure sometimes had serious consequences:

"...He [DOT provider PP] used to give patients tablets to take home.I saw a lot of difference [between the cards and the treatment boxes]. Then twice – thrice I requested him, 'do not do this'. But he was so used to it, that he would give the tablets [to take home]. Then I went to the patient's home.... I enquired [and found that] the patient had left the city with the medicines. The patient did not come for about a month and a half. He had taken the tablets that the doctor had given him. But he delayed his return.... because of that once again he became [sputum] positive and had to go on Cat II [re-treatment regimen]" (TB HV)

Supervision and monitoring

Programme officers felt that the only way to ensure that PPs take their responsibilities seriously and reduce default was continuous monitoring of the PP DOT centres. The TB HVs, primarily responsible for regular monitoring, were given explicit directives for their weekly visits:

"I tell the HVs that you have to see that they are filling the cards, doing the follow up and treatment [DOTS] should be under observation. I keep telling them that at each visit they have to remind [PPs] about these three things." (MO TB Unit)

Among the assigned tasks, retrieval action for defaulter patients was prioritised.

"TB HVs have to visit the PP DOT centres weekly. ...But [if] he is unable to go there on the assigned days then there is a gap. I have told TB HVs not to have that gap. If there is any interruption of weekly visits, even though it is not part of his advance

tour programme, priority should be given [to retrieval action]" (CTO)

Of the 155 DOT provider PPs who felt that the visits by TB HVs were useful, 28 (18%) specifically mentioned their importance in retrieving patients who interrupted or defaulted treatment,

"Patients don't take medicines. Sometimes there are 'social problems'. There is still a lot of 'stigma'. We don't have that much time, but they [TB HVs] can counsel [these patients] well." (DOT provider PP interviewed post-intervention)

"They go and give information to the patient properly. Patients do not pay attention to their illness.... The family also needs to be told. They have to be 'convinced' about taking their medicines properly. He [TB HV] does that." (DOT provider PP interviewed post-intervention)

The TB HVs' work in turn was supervised by STSs and programme officers through daily review and visits to DOT provider PPs' clinics.

"Once, the MO-TU visited a DOT provider in my area and checked the boxes. Two boxes matched with the cards but there was an error in the third one. She explained to me that even if one has good rapport with the doctor, it is important to cross check [the card with the box]. Actually the patient had not taken medicines for 15 days but the card had been marked." (TB HV)

These visits by the programme officer to PP DOT centres were also useful in monitoring quality of DOT at these centres, identifying weaknesses in the monitoring system and taking measures to strengthen them.

Efforts at ensuring sustainability

Senior programme officers attributed the sustained functioning of PPM to its initiation as a felt need and its implementation as an integral part

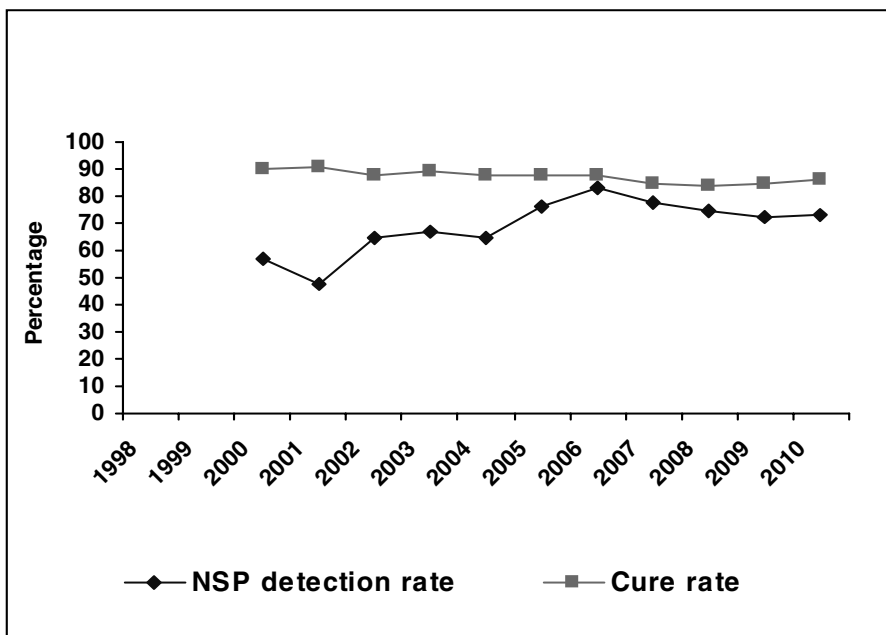


Figure 1: Performance of RNTCP in PC

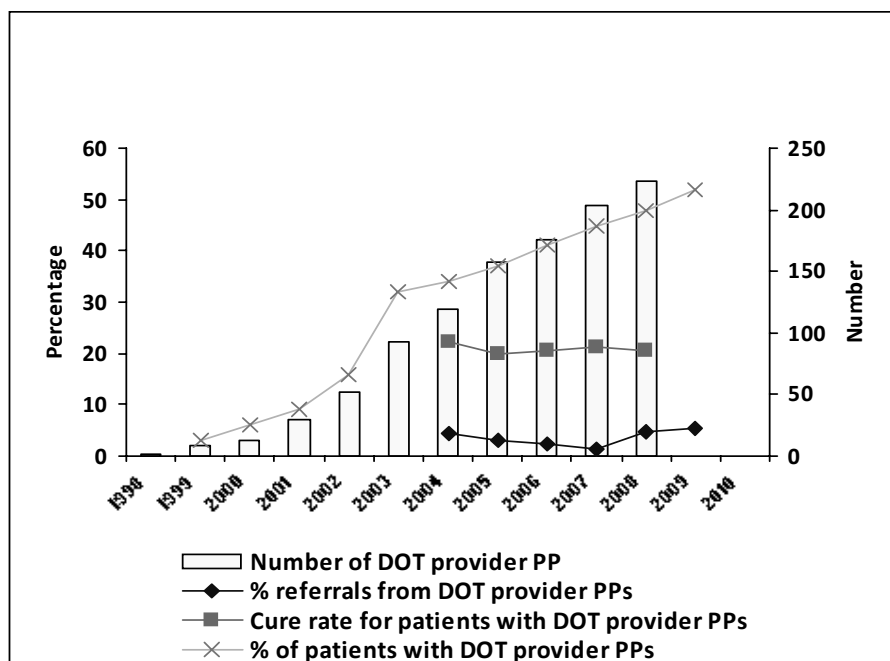


Figure 2: Performance of RNTCP in PC

Table 2: Treatment outcome for new sputum positive cases

Year	Sector	Cure	Default	Died	Failure	Transferred out	Total	Chi square probability (Cure / Default)	Chi square probability (Favourable / Unfavourable outcome)
		(Favourable outcome)	(Unfavourable outcome)						
2004	Public	358	26	21	13	5	423	0.007*	0.002342*
	Private	210	4	9	2	1	226		
2005	Public	376	20	25	14	0	435	0.394	0.266385
	Private	242	17	19	9	3	290		
2006 [#]	Public	298	22	17	17	5	359	0.158	0.541541
	Private	272	12	25	8	4	321		
2007	Public	243	24	19	8	6	300	0.025*	0.007071*
	Private	316	15	12	9	5	357		
2008	Public	247	11	14	13	6	291	0.389	0.580931
	Private	299	9	20	11	7	346		

*Significant at 5% level
[#]Data taken from a presentation³⁹

of the RNTCP. The CTO remarked that PPM in PC was successful due to a strong underlying health care delivery system.

“...the public health care delivery is very strong and that helps us [programme officers] to have a direct partnership with the PPs without involvement of any interface or NGOs. We are members of PCDA [doctors’ association], we participate in various doctors’ programmes and it helps us to get familiar with all the doctors there – allopaths, non-allopaths. So it helped us in bridging the gap and there is a direct relationship, direct partnership”.
 (CTO)

All levels of programme staff – from TB HVs to senior programme officers – have maintained contact with PPs. Senior programme officers’ visits provided opportunities to hold clinical discussions with PPs. Efforts to ensure sustainability have also included providing written or verbal feedback about referred patients, organizing periodic trainings for PPs and piloting an intervention to strengthen the referral – feedback system⁹.

Over the years, PPM-DOTS has moved from being an activity to meet the policy mandate to an established mechanism for quality assurance, evident in the resource mobilisation, including involvement of TB HVs for liaising with DOT provider PPs, and in the systematic use of operations research for periodic evaluation of the programme and for setting future directions. Two studies looking at the treatment delays in sputum positive patients were conducted in 2000 and 2004 respectively. While the first study hinted towards the benefits of PPM⁴¹, the second study showed evidence regarding the benefits of PPM-DOTS for patients as well as the programme by reducing the provider delays and costs incurred by patients before reaching the RNTCP⁸. In 2006, the CTC initiated the present intervention research study to explore the enablers and barriers for expansion and sustainability of PPM-DOTS that identified the need for increased communication between the PPs and the programme and better behaviour towards patients by the public health care staff. Accordingly interventions were piloted to respond to these needs- workshops on communication for RNTCP staff as well as zonal meetings between representative of RNTCP and PPs and an intervention to strengthen the existing referral and feedback system under the RNTCP.

Evaluation based on conventional indicators

The RNTCP in PC is successful with detection rates close to the national target and cure rates above the national target for most years since its introduction in 1998¹⁵⁻²⁴ (Figure 1). The private sector's contribution to case detection and treatment success has also increased over the past decade (Figure 2). For most years, the cure rate for patients on DOTS in the private and public sectors was comparable (Table 2).

Challenges faced

Ensuring partners' ownership of DOTS and adherence by the DOT provider PPs to the RNTCP guidelines were the main challenges in sustaining quality PPM in PC. Among the surveyed PPs, 22 (13%) of the 164 DOT provider PPs and 64 (19%) of the 333 PPs not providing DOTS prescribed non-RNTCP regimens to some of their patients. The most commonly reported reasons were that patients, especially when more educated and socio-economically better-off, chose private non-RNTCP treatment primarily because of stigma or prior poor experiences in the public sector. A small number of PPs perceived the RNTCP's insistence on re-diagnosing patients they had referred after diagnosis as challenging their clinical skills. Others felt that being a DOT provider limited their role as clinicians.

Despite repeated efforts by the RNTCP, many DOT provider PPs failed to inform the programme regarding treatment interruption by patients within the stipulated time period. Periodic CME sessions organised by the CTC to re-affirm the importance of treatment adherence were poorly attended as DOT provider PPs found them repetitive and unnecessary.

The CTO felt that one of the weaknesses of PPM-DOTS in PC was the inability of the MOs at peripheral health institutions (PHI) to be more actively involved in PPM-DOTS. Rigorous monitoring of public and private DOT centres by the MOs of PHIs and the MO-TU being solely dedicated to the RNTCP work were necessary to address this problem.

Ensuring referral of all TB suspects to the RNTCP was another challenge. Some PPs, especially allopaths, consultant physicians and PPs, who had started practicing before the RNTCP, did not refer all TB suspects to the RNTCP or referred only after a delay.

“Allopathic doctors hesitate to get involved because either they are attached to some physician or they have “relations” [relationship] with some hospital. If they come across a patient with Koch's [TB], generally they send him to a physician. Initially they get x-ray, and other investigations done from outside [private sector], and then if the patient is unable to afford, only then they refer to us. (TB HV)

Discussion

PPM-DOTS in PC has traits common to many successful projects documented elsewhere²⁵⁻³⁴ yet, it has components not commonly seen in most other models^{3, 6}.

First, PPM-DOTS in PC is an example of an initiative led by a strong public sector TB programme. Programme officers in PC have ensured that PPM-DOTS is sustained without external support or additional resources. In most other documented projects, an NGO or a professional body played a key role in establishing linkages between the public and private sectors³. Public-private partnerships that are formed because of policy mandates often fail to sustain beyond demonstration phase³⁵. In contrast, PPM-DOTS in PC was initiated and sustained by integrating it within the local RNTCP implementation machinery in order to expand services.

Second, PPM-DOTS in PC is one of the few Indian models implemented in close accordance with the concept of PPM originally envisaged by global and national policy makers by involving various types of private sector providers. There are PPM-DOTS projects in India that have focused on particular types of private care provider like PPs, pathology and radiology clinics, private specialists,

small nursing homes and TB sanatoria^{25-29,32,33}. Published literature shows very few Indian models have involved a range of private, NGO, corporate and non-RNTCP implementing public sector providers as partners^{26,27,31} using a multipronged approach^{29,31,36} in the way PC has.

Third, despite mixed evidence regarding the effective contribution of non-allopaths in PPM-DOTS^{27,29,33}, the RNTCP in PC has involved them as DOT providers. In a context where non-allopaths form 88% of practising PPs, their involvement is crucial as they may be the most accessible and affordable providers for many vulnerable patients³⁷.

Fourth, while the monitoring and supervision mechanisms in PC are comparable to those in other PPM projects^{27,29,33}, they stand out in terms of optimal use of available human resources for the entire range of PPM activities. While other Indian models of PPM-DOTS that used similar processes have acknowledged the benefits of the approach, they have reported difficulties in scaling-up the programme and expressed concerns regarding its sustainability³³. The programme in PC on the other hand, has ensured that the entire city is covered by TB HVs for over a period of five years.

The contribution of PPM-DOTS to case detection in PC, is comparable to projects in Mumbai, Kerala, and Delhi^{24,26,31,34}. As with other projects, treatment outcomes for patients with DOT provider PPs is satisfactory³⁸ and comparable^{27,33} to those with public sector DOT centres³⁹. PPM in PC is also comparable to other PPM projects in terms of reduction in costs incurred by patients in accessing DOTS^{8,27,40,41}; additionally, it also reduced system delays⁸.

Efforts invested by the CTC in PC to establish and maintain communication with partners, mobilise resources, conduct operations research for periodic assessment of the progress and sensitise PPs and patients regarding the benefits of PPM-DOTS have contributed to its success. Through these efforts, PC distinguishes itself from other projects that used similar strategies but were unable to expand due to increased burden of supervision

for staff³³; or could not be sustained due to lack of communication between the partners, weak leadership, or lacking infrastructure and commitment from the public sector³². Most importantly, unlike other projects, PPM-DOTS in PC could be sustained because it is well integrated within the local RNTCP³².

CONCLUSION

The case of PPM-DOTS in PC reiterates the importance of initiative and leadership by the programme for orienting and training the potential partners; and ensuring adequate supervision and monitoring while having a continued dialogue with them. It also demonstrates the importance of the programme's commitment towards a systematic and organised identification of problems and challenges and addressing them through optimal use of local resources to help scale up and sustain PPM-DOTS.

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