Tuberculosis diagnosis and management in the public versus private sector: a standardised patients study in Mumbai, India

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ABSTRACT

Background There are few rigorous studies comparing quality of tuberculosis (TB) care in public versus private sectors.

Methods We used standardised patients (SPs) to measure technical quality and patient experience in a sample of private and public facilities in Mumbai.

Results SPs presented a ‘classic, suspected TB’ scenario and a ‘recurrence or drug-resistance’ scenario. In the private sector, SPs completed 643 interactions. In the public sector, 164 interactions. Outcomes included indicators of correct management, medication use and client experience. Public providers used microbiological testing (typically, microscopy) more frequently, in 123 of 164 (75%: 95% CI 68% to 81% vs 223 of 644 interactions (35%: 95% CI 31% to 38%) in the private sector. Private providers were more likely to order chest X-rays, in 556 of 639 interactions (86%; 95% CI 84% to 89%). According to national TB guidelines, we found higher proportions of correct management in the public sector (75% vs 35%; adjusted difference 35 percentage points (pp); 95% CI 25 to 46). If X-rays were considered acceptable for the first case but drug-susceptibility testing was required for the second case, the private sector correctly managed a slightly higher proportion of interactions (67% vs 51%; adjusted difference 16 pp; 95% CI 7 to 25). Broad-spectrum antibiotics were used in 76% (95% CI 66% to 84%) of the interactions in public hospitals, and 61% (95% CI 58% to 65%) in private facilities. Costs in the private clinics averaged rupees INR 512 (95% CI 485 to 539); public facilities charged INR 10. Private providers spent more time with patients (4.4 min vs 2.4 min; adjusted difference 2.0 min; 95% CI 1.2 to 2.9) and asked a greater share of relevant questions (29% vs 43%; adjusted difference 13.7 pp; 95% CI 8.2 to 19.3).

Conclusions While the public providers did a better job of adhering to national TB guidelines (especially microbiological testing) and offered less expensive care, private sector providers did better on client experience.

WHAT IS ALREADY KNOWN ON THIS TOPIC

→ There are few studies directly comparing public and private sector quality of medical care using rigorous methods.
→ India has the world’s highest burden of tuberculosis (TB), and although free care is available in the public sector, over half of all patients with TB seek care in the private sector.
→ This study used simulated standardised patients (SPs) presenting TB scenarios in the public and private sectors of Mumbai, India, to accurately measure and compare practice between sectors across a wide range of outcomes.

WHAT THIS STUDY ADDS

→ The researchers sent SPs presenting two TB case scenarios to 393 private sector facilities and 63 public sector facilities, completing 807 provider-patient interactions.
→ Private sector providers were more likely to use chest X-rays for diagnostic purposes, while public sector providers were more likely to use sputum-based testing, in line with governmental guidelines. Both sectors extensively prescribed antibiotics.
→ Private sector providers had significantly higher fees than public providers; private providers also offered shorter waiting times, longer consultations and more patient-centric care.

INTRODUCTION

That universal health coverage in low-income and middle-income countries (LMICs) requires not just coverage or utilisation, but also access to high-quality healthcare is increasingly recognised.1–3 As multiple studies on quality of care show, those seeking care for common conditions ranging from malaria to asthma to diarrhoea are unlikely to be appropriately diagnosed or managed, with underuse of tests and overuse of medicines, especially antibiotics.4–8
Particularly challenging is the intersection between quality of healthcare and the prominent private sector in many resource-poor settings. Several observers have argued that quality of care is particularly deficient in the private sector, raising challenging questions of why patients continue to pay out-of-pocket for visits to private or informal sector providers when the public sector offers a seemingly viable and lower cost alternative. Indeed, during the COVID-19 crisis, patients have relied heavily on the public healthcare sector, even as the private sector has struggled.

Given the critical policy questions that it raises, it is surprising that the evidence on quality differences between public and private sector care is not particularly robust. Ideally, we would compare ‘like for like’, asking how the exact same patients are treated when they visit providers in the public sector compared with the private sector. Another approach would compare the same patient seeing the same doctor in their public and private sector locations, allowing researchers to isolate the sectoral component of a given provider’s care decisions (as opposed to potential differences in which providers practise in the public vs private sector).

Of the multiple studies on private and public sector care, only one study from rural India compared quality for the same patient and provider. This study showed large sectoral effects on provider behaviour: the same provider was more likely to appropriately manage a standardised patient (SP) in their private compared with their public sector clinic, with no difference in the use of medicines or antibiotics.

We now provide the first public-private comparison for urban India, using tuberculosis (TB) as a lens through which to examine differences in quality of care across public and private sector providers in the city of Mumbai. The study builds on a previous large study that looked at the diagnosis and management of TB in Mumbai’s private sector, and we establish a comparison by using the same individual SPs and case scenarios in the public sector. Although we do not compare the same doctor in their public and private clinics, we are able to isolate multiple features of TB management from the patient perspective.

Recent research based on large-scale studies of the Indian healthcare system has shown that the country’s private healthcare system is a large, diverse environment. As much as 70% of healthcare is sought from private primary care providers nationwide. In Mumbai, street-by-street mappings of healthcare providers have uncovered a large and varied private sector, ranging from highly trained and specialised chest physicians to providers who are trained in alternative systems of medicine, but who also diagnose and treat allopathically (the main recognised systems are Ayurveda, Yoga, Unani, Siddha and Homeopathy, known collectively as AYUSH providers). Not surprisingly, the predominance of the private sector extends to the diagnosis and management of TB. A recent study estimated that private provision of TB medication accounts for two-thirds of the national supply, dispensing around 18 million patient-month supplies annually compared with the 9 million or so delivered by the public sector each year.

Our decision to use TB as an index case was based on two related factors. First, the previous study in rural India studied public-private differences for quality of care used angina, asthma and childhood diarrhoea. While there are important public health considerations here such as the overuse of antibiotics, the first-order costs of poor diagnosis and management for these common conditions are primarily borne by the patient and their family. In contrast, TB is airborne and contagious, and therefore poor diagnoses pose additional risks to the broader population in addition to potentially devastating consequences for the afflicted. This contagion externality implies that there is a potential gap between the individually optimal care for a given patient and the public health rationale for specific types of management, and this gap may become apparent in the comparison of public versus private sector care.

Second, until the COVID-19 pandemic, TB was the largest single infectious disease cause of mortality worldwide. Mumbai has a high burden of TB, including drug-resistant TB. The continuing high prevalence of TB in the population and the emergence of increasingly drug-resistant strains has led the Government of India to take a more aggressive stance towards the disease with the Ministry of Health committing to elimination of the disease by 2025. The Mumbai Mission for TB Control was launched in 2013, and is led by the Municipal Corporation of Greater Mumbai (MCGM), the city government. The greater focus on TB within the public sector implies that we are able to provide estimates of quality of care for a disease that is critical both from epidemiological and political perspectives: TB had considerable political will and resources dedicated to its control, including the engagement of private providers in the city.
To measure the quality of care in the public and private sector, we used SPs—trained members of the community who present the same case to multiple providers posing as patients. This method has gained rapid acceptance in quality measurement in countries around the world. The use of SPs is informed by the fact that the most easily observable characteristics of facilities—including facility equipment, provider education levels, medication supplies and patient access—are poor predictors of key quality metrics. The research community has developed quality measurement in countries around the world. The use of SPs is informed by the fact that the most easily observable characteristics of facilities—including facility equipment, provider education levels, medication supplies and patient access—are poor predictors of key quality metrics. The research community has developed quality measurement in countries around the world.

Methods

Public and private health systems in Mumbai

Primary care in Mumbai is available through both public and private sector clinics. Patients choosing to visit publicly funded facilities have a range of options from tertiary hospitals (usually attached to medical colleges), smaller, peripheral hospitals, to primary health centres and dispensaries staffed with qualified doctors. Doctors in the public sector receive a fixed salary, and all consultations, lab tests and medicines should be free. Costs are standardised across the city in the public sector. While tertiary, public hospitals often have specialists (eg, chest physicians), primary care centres are typically staffed by MBBS trained doctors, pharmacists, nurses and other staff.

Patients choosing the private sector have a range of options, from informal providers, to AYUSH practitioners, to qualified MBBS general practitioners, as well as specialists in secondary and tertiary care centres and hospitals. Cost of consultation varies widely across this spectrum, with informal and AYUSH providers being the most affordable, and specialists in private and corporate hospitals being the most expensive. Costs in the private sector are not standardised or regulated for most part.

The SP methodology

SPs are trained community members who pose as actual patients seeking care in a healthcare provider’s place of practice. They are recruited from local communities, speak the local language and are extensively trained to portray a predetermined and scripted medical condition to those healthcare providers, as well as to recall accurately and in great detail the actions of the provider. Previous publications provide more details on the SP methodology, and prior studies using the method for TB in India, China, Kenya and South Africa have demonstrated the validity of the method for TB presentation with no significant risks to providers, SPs or other patients. Informed by clinical observation, all SP interactions start with an opening statement, which is the primary presenting complaint from the patient. Table 1 lists the initial symptoms that our two SP scenarios reveal in their complaint to the provider. Doctors then proceed exactly as they do with any other patients—after all, they have no reason to doubt the veracity of the case presentation.

Extensive work on specific case histories ensures that the answers that SPs give help drive the provider towards the TB diagnosis. Therefore, there is an extensive list of history questions that the SP will answer in the affirmative, as well as other questions that the SP will say ‘no’ to. For instance, if the doctor asks whether the SP has experienced a productive cough (not dry), weight loss or night sweats, the SP will say ‘yes’. SPs are also trained to reply in the negative to questions that serve to rule out symptoms of other potential causes, such as asthma and allergies.

Data

For this study, we used SP data collected from a project designed to assess the quality of TB care among public and private healthcare providers in 2019 in Mumbai. The study was conducted in 2018 and 2019 at city-wide scale in both the public and private sectors in Mumbai, allowing us to estimate accurate comparative measures of the way in which patients presenting in the private and public sectors are initially managed. A full description of the study design and results from an earlier study round (conducted in 2014–2015) in the private sector has previously been published. This study reports results using new data collected several years later among the same sample, combined with an additional sample of public sector facilities in Mumbai. Our detailed descriptions and comparisons of the behaviour of facilities across sectors is further enabled by the fact that the same individual SPs were used in each case to present identical TB case scenarios in both sectors, and the SPs had been specifically trained to report a wide range of outcomes through a structured questionnaire.

In that project, 11 SPs visited 395 different randomly sampled private healthcare facilities between 28 September 2018 and 16 January 2019 (completing 644 interactions). Private sector providers in this study were providers with a Bachelor of Medicine, Bachelor of Surgery (MBBS) degree, or specialists with an additional MD (typically in chest medicine). Stratified sampling was used to randomly oversample providers enrolled in private provider engagement TB programmes in the city; overall, the sample was broadly representative of a wide geography in the city’s private sector. A complete description of these samples is available in prior publication.
New data collection on the public sector was also conducted in Mumbai. In the public sector, SPs visited a random sample of 25% of the city’s 175 public dispensaries (N=44) and all of the 15 peripheral hospitals and four medical colleges (reported together as ‘public hospitals’) operated by the Municipal Corporation of Greater Mumbai (MCGM). SPs successfully completed interactions at all 44 randomly sampled public sector dispensaries and the 19 public hospitals, for a total of 164 interactions at 63 different public healthcare facilities between 25 January 2019 and 14 March 2019. Online supplemental appendix figure A5 verifies the validity of the random sample of dispensaries by reporting the results of a comparison of TB-related administrative statistics in sampled dispensaries relative to the complete listing of dispensaries using MCGM administrative data. We found no detectable statistical differences along any margin, which confirmed the representativeness of the public sector facility sample.

Across these facilities, we deployed SPs presenting with two predetermined TB case scenarios. The two SP cases developed with the support of a technical advisory group comprised of clinicians, public health experts, economists, anthropologists, and relying on both the Standards for TB Care in India (STCI) and the International Standards of TB Care. In case 1, a ‘classic, suspected TB’ profile of a person who should be evaluated for TB, the SP presented with 2 weeks of cough and fever and revealed additional characteristic symptoms suggestive of TB disease if questioned. In case 2, a ‘recurrent/drug-resistant’ profile, the SP also presented with 2 weeks of cough, and further explained that these symptoms were recurrent from a previous episode in which TB was diagnosed and treated, but that the treatment regimen had been discontinued when their symptoms had improved. The presentation was intended to be highly suggestive of recurrent and potentially drug-resistant TB. The details of the two SP cases and their assignment are presented in Table 1; the full case scenarios, demographic backgrounds, and the pre-scripted answers to a range of anticipated history questions are included in the online supplemental material.

In the private sector, 394 case 1 interactions and 250 case 2 interactions were completed. In the public sector, 82 case 1 interactions and 82 case 2 interactions were completed. In total, 11 SPs (4 women and 7 men) portrayed those cases. Each SP portrayed only one of the two cases at a time, and only one SP presented a different case in the public sector than in the private sector. Three SPs did not participate in the public sector portion and one did not participate in the private sector portion. All medicines prescribed or offered to the SPs were independently coded and classified after being brought to the study office. No subgroup analyses were performed as part of this study. Prior publications examined variation in outcomes across individual standardised patients and by SP gender specifically; both found small or zero effects of SP identity on care outcomes within this sample.

### Table 1  Standardised patient scenarios and expected correct management

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scenario description</strong></td>
<td><strong>Classic, suspected TB</strong></td>
</tr>
<tr>
<td><strong>Case description</strong></td>
<td>Classic case of presumed TB with 2–3 weeks of cough and fever</td>
</tr>
<tr>
<td><strong>Patient presentation</strong></td>
<td>Presents with presumptive TB, for the first time, to the provider, saying: “Doctor, I have cough that is not getting better and some fever too.”</td>
</tr>
<tr>
<td><strong>STCI management</strong></td>
<td>Recommendation for sputum testing, chest radiograph or referral to a public DOTS centre or provider</td>
</tr>
<tr>
<td><strong>RNTCP guidelines</strong></td>
<td>Sputum smear examination to be used as the frontline test. Drug-susceptibility test (culture, line probe assay, or Xpert MTB/RIF) acceptable but not required except for confirmed TB or special populations.</td>
</tr>
<tr>
<td><strong>Sampling: private</strong></td>
<td>1x at 393/393 purposively sampled facilities</td>
</tr>
<tr>
<td><strong>Sampling: public dispensaries</strong></td>
<td>1x at 44 randomly sampled of 175 listed facilities</td>
</tr>
<tr>
<td><strong>Sampling: public hospitals</strong></td>
<td>2x at each of the available 19 facilities</td>
</tr>
</tbody>
</table>

RNTCP, Revised National TB Control Programme; STCI, Standards for TB Care in India; TB, tuberculosis.
Outcome measures

We divided outcome measures into four ‘families’, which we used to adjust standard errors (SEs) and confidence intervals (CIs) for multiple hypothesis testing. Families 1 and 2 captured the case-specific appropriateness of clinical management (or adherence to technical guidelines). Family 1 included two binary summary indicators of correct management and the share of checklist questions asked, both of which were predetermined, case-specific outcomes.\textsuperscript{37} First, we used the Standards for TB Care in India (STCI) guidelines, consistent with past evaluations of the private sector, which are best practices promulgated but not necessarily enforced by the Ministry of Health & Family Welfare. Second, we also used as a benchmark the Revised National TB Control Programme (RNTCP) guidelines, by which public sector providers are trained and evaluated. RNTCP was recently renamed as National Tuberculosis Elimination Programme (NTEP). We assess both sectors against both measures for comparability. Our rationale for using two standards was that the STCI yardstick allowed us to compare the results with our previous SP studies in India, while the RNTCP standard allowed us to judge public providers on the basis of what they are expected to follow.

Benchmarks for the STCI-based and the RNTCP-based summary indicators of correct management differed due to the fact that prior SP work in India had focused on the private health sector, while the current work also included the public sector. Past studies used an aggregate definition of correct management for each case based on international and local standards.\textsuperscript{17,30} Since this study was also conducted in the public sector, we included an additional benchmark for quality of care for both sectors defined by the then-current public sector diagnostic protocol. That definition followed the 2016 Technical and Operational Guidelines for TB Control in India and the 2017 Guidelines on Programmatic Management of Drug-resistant TB by the RNTCP or NTEP.\textsuperscript{39,40} We report top-line results using both definitions for both sectors, such that all reported direct comparisons compare identically defined indicators across the two sectors.

Previous work defined correct management for case 1 as a recommendation for any sputum testing (sputum smears, Xpert MTB/RIF or culture), or chest radiograph, or referral to a public DOTS centre or a private provider or specialist; for case 2, correct management was defined as recommendation for any drug-susceptibility test (culture, line probe assay or Xpert MTB/RIF) or referral to a public DOTS centre or to a private provider or a specialist, specialist since the patient has recurrent TB symptoms, suggestive of drug-resistance TB.\textsuperscript{31} These definitions reflected the Standards for TB Care in India, and was also used in the previous SP surveys in India, all of which were conducted among private health sector providers.\textsuperscript{37} For the private sector, we used a lenient definition of correct management, and accepted a wide range of TB tests, including chest X-rays (CXR), which are not confirmatory but acceptable as triage tests.

For case 1, RNTCP or NTEP guidelines recommended that all presumptive TB cases would receive sputum smear examinations as the frontline test. CXRs were not the frontline TB test, since the emphasis in the public sector was sputum-based, microbiological testing. For the following key and vulnerable populations, RNTCP allowed the use of Xpert MTB/RIF (CBNAAT) as the frontline molecular test: paediatric age groups, people living with HIV, extrapulmonary TB sites and smear-negative individuals with X-rays suggestive of TB. Case 1 did not fit any of these special, vulnerable populations. The RNTCP approach for Universal Drug Susceptibility Testing (UDST) allowed for all diagnosed and notified TB patient to later receive Xpert MTB/RIF.\textsuperscript{41} In other words, Xpert testing was allowed after TB was microbiologically diagnosed. So, for case 2, an initial approach of TB diagnosis using sputum testing was acceptable, under these guidelines, since direct use of Xpert MTB/RIF as a frontline test did not cover patients with prior history of TB therapy.

Family 2 outcomes focused on medications and included: starting TB treatment without test results or giving quinolone antibiotics, broad-spectrum antibiotics or steroids.\textsuperscript{42,43} Medications from each interaction were ex-post coded by name to correspond to ATC code classifications. Fluoroquinolone antibiotics were defined as ATC codes beginning with J01M; broad-spectrum antibiotics were all other ATC codes beginning with J01 except anti-TB medications; and steroids were defined as ATC codes beginning with H02, R01 or R03. The previous literature has identified both the use of quinolones and steroids as potentially contributing to drug resistance and diagnostic delays due to symptom and immune response suppression,\textsuperscript{44–47} and there is a persistent concern that the overuse of antibiotics is leading to the proliferation of antibiotic-resistant TB variants in the general population. It is widely believed that the dominance of a poorly regulated fee-for-service, private sector is one of the main reasons for high antibiotic usage in India.\textsuperscript{48,49}

Outcomes in family 3 addressed a persistent concern that user experience and patient satisfaction might be suboptimal in the public sector.\textsuperscript{50} We included a large set of quality indicators that captured the experience of the interaction in family 3, ranging from the subjective rating given by the SP on a 1-to-10 scale and whether the SP would visit the provider again to specific questions like whether the provider was distracted (eg, whether they used a cell phone or whether there was a television on at the time of the interaction). While we recognised that SPs are not truly ill and the subjective indicators here could not be translated directly to patient experiences, we included them to provide an assessment of differences between the two sectors. SPs, unlike other patients, have the unique ability to visit multiple facilities presenting as the same person with the same complaint at the same stage of treatment—therefore, their perception of their interpersonal treatment in various circumstances is a comparator that is difficult to obtain from other patients.
Statistical analysis
To estimate quality levels separately by health sector, we took advantage of the fact that all providers were visited by the same SPs and presented with identically scripted case presentations. Therefore, we treated the mean outcomes for each category of provider as unbiased measures of the average behaviour of the providers visited in that sector for that case presentation. Fieldwork was organised such that the same SPs were used first for the private sector data collection and then for the public sector, meaning that the personal characteristics of SPs were the same across the two sectors. As described in prior work, multi-level outcome structures were taken into account by modelling individual effects for the standardised patients, as well as adjusting CIs for hierarchical clustering within facilities (since multiple visits were conducted at each).33

Power calculations were based off completed private sector data collection using two-proportions comparisons. These calculations indicated that, for the observed levels of TB testing and the sample size in the private sector data collection, 80% power would be achieved for a 10-percentage-point difference at maximum 145 observations (considering base rates of 85% or 15%) and minimum 105 observations (considering base rates of 90% or 10%) in the public sector. Therefore, our pooled (unweighted) sample of 164 public sector interactions was sufficiently powered for all two-way comparisons included in the study, and we adjusted CIs for multiple comparisons appropriately as described below.

We used ordinary least squares regression to assess differences in clinical care processes and case management across facilities by sector. In pooled specifications, we controlled for differences across case scenario as well as the individual SP identity. These attributes may affect quality of care and we controlled for them to compare across sectors only within identically scripted patient presentations.31 We clustered SEs at the facility level when overall regression differences to avoid overstating the precision of our estimates due to repeated visits with the same providers. Therefore, estimates corresponded to the expected average quality of care outcomes and sectoral differences if facilities were chosen at random from the sampling list for each sector.31 33 When multiple related outcomes were regressed simultaneously, statistical significance was determined using the Benjamini-Hochberg procedure to control the false discovery rate at α=0.050.32 All data analysis was performed with Stata 17 (StataCorp, Texas, USA).33

Patient and public involvement
No actual patients were involved in this research study, since we used simulated SPs only to collect data on provider behaviour. However, simulated SPs and the research questions they engage are by their nature based on the experience of real patients and their interests. In developing the case scenarios, presentations, medical and social histories, and in developing tools to measure both technical care quality as well as client experience, the team relied heavily on their observations from and work with actual patients throughout their prior work. The involvement of local researchers is described in the author reflexivity statement (see online supplemental appendix).

RESULTS
Case management
Table 2 reports the outcome measures we used along with summary means for each measure. Figure 1 provides an overview of the use of diagnostic testing by sector and case scenario. In this figure, we pooled all public sector facilities into a single group, and present them alongside the private sector testing outcomes. Most notably, sputum acid-fast bacillus (AFB) smears were the most common microbiological test used in the public sector private sector, while initial management was dominated by use of CXRs in the private health sector. The public sector also offered CXRs for a substantial number of SPs, but did so in fewer interactions than the private sector and in fewer interactions than microbiological tests were used.

We present more detailed breakdowns of non-diagnostic elements and our STCI-based measure of care alongside additional quality characteristics in the next two figures. Figure 2 reports pooled estimates of the quality of care for the classic suspected TB scenario (case 1) and the recurrent TB/drug-resistant scenario (case 2) together, and figure 3 presents a detailed breakdown of management behaviours for each case.

As figure 3 shows, in both cases, public sector providers made more frequent use of microbiological testing, in line with RNTCP protocol (sputum AFB, culture DST or Xpert MTB/RIF). In contrast, private providers were more likely to order a CXR and Xpert MTB/RIF in both cases, doing so in 144 of 639 interactions (23%; 95% CI 19% to 26%). In both cases, public providers were more likely to mention a suspicion of TB to the patient (67% vs 49%; adjusted difference 18%; 95% CI 9% to 27%). Thus, when we defined correct management to be in line with RNTCP guidelines, where the sputum tests were required in both cases first, we found substantially higher proportions of correct management in the public compared with the private sector (75% vs 35%; adjusted difference 35 pp; 95% CI 25 to 46).
When we classified correct management according to previous studies of the private sector (which accepted use of CXRs as an initial test), the results showed that a higher proportion of interactions were correctly managed in the private sector (67%; 95% CI 63% to 70%). This was largely due to the higher rate of CXR use in the private sector.

The private sector itself included doctors with differing qualifications as our private sector sample included a number of specialists with advanced degrees (which we define as holding an MD in addition to the standard MBBS qualification). Online supplemental appendix figure A1 shows that private sector providers with advanced degrees were indeed more likely than other private sector providers to order appropriate microbiological tests, but did not differ substantially on other dimensions of care. (Online supplemental appendix figure A2 and A3 provide detailed comparisons.)

**Cost and convenience**

Like the difference in the use of microbiological testing, other measures also suggested stark differences between the types of patient-centric care delivered across the two sectors. Patients spent significantly longer waiting in the public hospitals—about 2 hours—compared with private facilities, where they waited about an hour (57 min vs 126 min; adjusted difference 70 min; 95% CI 34 to 106). Public dispensaries typically had patients wait

### Table 2 Outcome measures

<table>
<thead>
<tr>
<th>Family 1: appropriate clinical management</th>
<th>Case 1</th>
<th>Private</th>
<th>Public hospital</th>
<th>Public dispensary</th>
<th>Case 2</th>
<th>Private</th>
<th>Public hospital</th>
<th>Public dispensary</th>
</tr>
</thead>
<tbody>
<tr>
<td>STCI management</td>
<td>Mean</td>
<td>0.84</td>
<td>394</td>
<td>38</td>
<td>44</td>
<td>0.34</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>RNTCP guidelines</td>
<td></td>
<td>0.42</td>
<td>394</td>
<td>38</td>
<td>44</td>
<td>0.36</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>Share of questions</td>
<td></td>
<td>0.34</td>
<td>394</td>
<td>38</td>
<td>44</td>
<td>0.55</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>Chest X-ray</td>
<td></td>
<td>0.81</td>
<td>394</td>
<td>38</td>
<td>44</td>
<td>0.85</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>Sputum AFB</td>
<td></td>
<td>0.23</td>
<td>392</td>
<td>38</td>
<td>44</td>
<td>0.38</td>
<td>249</td>
<td>38</td>
</tr>
<tr>
<td>Xpert MTB/RIF</td>
<td></td>
<td>0.17</td>
<td>390</td>
<td>38</td>
<td>44</td>
<td>0.27</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>TB suspicion</td>
<td></td>
<td>0.51</td>
<td>393</td>
<td>38</td>
<td>44</td>
<td>0.55</td>
<td>250</td>
<td>38</td>
</tr>
<tr>
<td>Referred away</td>
<td></td>
<td>0.02</td>
<td>391</td>
<td>38</td>
<td>44</td>
<td>0.06</td>
<td>250</td>
<td>38</td>
</tr>
</tbody>
</table>

| Family 2: medication use                 |        |         |                 |                  |        |         |                 |                  |
| Started TB treatment                     | Mean   | 0.00    | 394             | 38                | 44     | 0.04    | 250             | 38                | 44                |
| Fluoroquinolones                         |        | 0.05    | 394             | 38                | 44     | 0.05    | 250             | 38                | 44                |
| Other antibiotic                         |        | 0.71    | 394             | 38                | 44     | 0.53    | 250             | 38                | 44                |
| Steroids                                 |        | 0.02    | 394             | 38                | 44     | 0.03    | 250             | 38                | 44                |

| Family 3: client experience              |        |         |                 |                  |        |         |                 |                  |
| SP Subjective Rating (1–10)             | Mean   | 7.44    | 393             | 38                | 44     | 7.52    | 249             | 38                | 44                |
| Provider used cell phone                 |        | 0.09    | 393             | 38                | 44     | 0.11    | 249             | 38                | 44                |
| Other people were in room               |        | 0.11    | 393             | 38                | 44     | 0.08    | 249             | 38                | 44                |
| Provider had a TV on                     |        | 0.00    | 393             | 38                | 44     | 0.00    | 249             | 38                | 44                |
| SP liked the provider                   |        | 0.95    | 393             | 37                | 44     | 0.95    | 249             | 38                | 44                |
| SP would go to this provider            |        | 0.94    | 393             | 38                | 44     | 0.95    | 249             | 38                | 44                |
| Provider created a private environment  |        | 0.84    | 393             | 38                | 44     | 0.80    | 249             | 38                | 44                |
| Provider seemed knowledgeable about illness |    | 0.60    | 393             | 38                | 44     | 0.83    | 249             | 38                | 44                |
| Provider addressed worries seriously    |        | 0.56    | 393             | 38                | 44     | 0.60    | 249             | 38                | 44                |
| Provider explained SP condition         |        | 0.07    | 392             | 38                | 44     | 0.09    | 249             | 38                | 44                |
| Provider explained SP treatment plan    |        | 0.36    | 391             | 38                | 44     | 0.36    | 249             | 38                | 44                |

| Family 4: cost and convenience          |        |         |                 |                  |        |         |                 |                  |
| Time waiting (min)                       | Mean   | 58.36   | 386             | 38                | 44     | 66.64   | 249             | 38                | 44                |
| Amount paid (INR)                        |        | 425.25  | 394             | 38                | 44     | 388.45  | 250             | 38                | 44                |
| Time with provider (min)                 |        | 4.10    | 391             | 38                | 44     | 3.88    | 249             | 38                | 44                |

RNTCP, Revised National TB Control Programme; SP, standardised patient; STCI, Standards for TB Care in India; TB, tuberculosis.
only 36 min (95% CI 29 to 42). Costs to patients in the 
public sector were INR 10 with no variation (one visit 
recorded zero cost paid), while costs to patients in the 
private clinics averaged INR 512 (95% CI 485 to 539).

In further measures of patient experience, we observed 
two substantial differences between public hospitals and 
private facilities. First, private providers spent more time 
with patients than public hospitals (4.4 min vs 2.4 min; 
adjusted difference 2.0 min; 95% CI 1.2 to 2.9) and, 
second, private providers asked a correspondingly higher 
share of questions about the patient’s condition (29% vs 
43%; adjusted difference 13.7 pp; 95% CI 8.2 to 19.3).

Use of medications

The use of medications was broadly similar across all 
groups of facilities, with very low recorded usage of TB 
treatment, quinolone antibiotics or steroids. However, the 
use of other broad-spectrum antibiotics remained high in 
all settings, with public hospitals offering such medications 
at 58 of 76 interactions (76%; 95% CI 66% to 84%), 
and private facilities less likely at 395 of 643 interactions 
(61%; 95% CI 58% to 65%). We further observed very 

few providers in any group who chose to refer the patient 
for outside care. Just 8 of 473 case 1 interactions resulted 
in referral (2%; 95% CI 1% to 3%), and 19 of 332 case 2 
interactions did (6%; 95% CI 4% to 9%); public hospitals 
were the most likely to do so (13%; 95% CI 6% to 27%). 
All public sector referrals were within the public sector 
(primarily to DOTS centres), while two-thirds of private 
sector referrals were to private specialists and one-third 
were to the public sector. Since referrals are nearly non-
existent in our data, the remaining estimates of clinical 
management—the diagnostic decisions observed at the 
visited clinics themselves—are estimates of the complete 
services that any patient would have received unless 
they chose to seek further care themselves or return for 
follow-up care. For both cases, we accept any referral as 
correct management, and this decision does not affect 
any main results.

User experience and patient satisfaction

Figure 4 presents differences in the satisfaction and expe-
rience reported by the SPs themselves. Prior evidence 
has suggested cases of suboptimal patient experience, 
with reports of poor interpersonal treatment of patients 
in some cases.50 We found little evidence of systematic
problems with the quality of personal treatment. We also did not observe any substantial gap in SPs’ personal assessments of the experience between the public and private sector. For instance, between 94% and 99% of SPs reported they liked the doctor and would go there again, in both sectors. The only large differences observed were that public hospitals were substantially more likely to have other people in the room with the patient (39% vs 7%; adjusted difference 33 pp; 95% CI 26 to 40). SPs were correspondingly less likely to report that public providers had created a private environment for them (38% vs 86%; adjusted difference 47 pp; 95% CI 36 to 59).

Regression comparisons by public facility type
To summarise these differences, we report standardised regression estimates of differences between private facilities and public hospitals in figure 5, and between private facilities and public dispensaries in figure 6, including all the measures reported previously. All measures were standardised to the same scale by transforming the

Figure 2  Primary management outcomes by study strata. This figure reports a variety of measures for all SP interactions. The STCI management measure is defined as each case 1 interaction that received a referral, a chest X-ray, a sputum AFB test, or an Xpert CBNAAT test or other drug-susceptibility test; and for each case 2 interaction that received a referral or an Xpert CBNAAT test or other drug-susceptibility test. All other measures are as reported by the SP after the interaction was completed. AFB, acid-fast bacillus; TB, tuberculosis, Xpert MTB/RIF, CBNAAT *Mycobacterium tuberculosis* rifampicin sensitivity testing.

dependent variable to mean zero and SD 1; they were grouped into four families for purposes of multiple hypothesis correction using Bonferroni CIs. Regressions were then modelled for multilevel data with individual effects for SP and case scenario, with clustering adjustments by facility; additional details are presented in the online supplemental appendix. The figure highlights all statistically significant differences after applying the family-wise Benjamini-Hochberg false discovery rate control procedure.52

Compared with public hospitals, private providers charged more money, but spent more time with the SPs; asked more history questions; were more likely to create a private environment; and were more likely to complete more checklist examination and history-taking items. The public providers charged little or nothing; were more likely to have other people in the room; had the SPs wait longer; were more likely to order a sputum TB tests; and were more likely to inform the SP of a suspicion of TB. When correct management was judged by use of sputum-based microbiological testing, then the public sector much fared better. In the equivalent comparison between private facilities and public dispensaries, the public sector dispensaries were also more likely to order sputum-based microbiological tests. The private sector was again more likely to explain the condition, order an X-ray and spend slightly more time and ask more questions. Online supplemental appendix table A2 reports the complete statistics for the estimated differences of all comparisons in linear levels.

**DISCUSSION**

Many comparisons between public and private healthcare rely on administrative data from both sectors to draw conclusions. Because these data are scarce and
because different sectors even in the same location have

different client mixes and different data collection protocols, there are nearly no ‘apples to apples’ comparisons

of the quality of care between sectors that use valid counterfactuals.15 These statistical issues are unavoidable in administrative data,25 leading to literatures that produce extremely heterogeneous results in meta-analysis54 or that rely on intermediate indicators rather than quality outcomes.55

Only very recent studies—such as one conducted with standardised patients in Xi’an, China, among 212 public providers and 27 private providers—have begun to directly compare equivalent quality outcomes across sectors with gold standard measurement methods.56 This study collected data on quality using the method of SPs, similar to a prior study that compared the performance of individual providers in the public and private sectors (when they worked in both).16 In that study, a selected subsample of providers and the same (standardised) patients were observed in different contexts, allowing the authors to estimate the effect of the public sector setting on provider performance.

This study observed a fixed sample of the same (standardised) patients in interactions with the true provider mix in each sector, allowing us to estimate differences in the expectations a fully informed individual would have before choosing where to seek care. We do not need to interpret these regressions as estimating a comparison of the care received by the patients who chose each sector; care-seekers would be able to choose between sectors

Figure 4 Client experience by study strata. This figure reports a variety of measures that capture the subjective satisfaction of the standardised patient (SP) with the clinical interaction. The first three (cell phone use, other people present and TV on) are factual reports of the provider’s conduct. The measures of whether the SP liked the provider and would see that provider again (personally) are yes/no questions posed to the SP. The remaining questions regarding the SP’s perception of the provider’s conduct require the SP to choose between ‘Not at all’, ‘Somewhat’ and ‘Definitely’; reported here is the share of SPs who responded the provider ‘Definitely’ met the description.
based on their needs and the costs associated with each. In this context, instead, such regression comparisons provide insights into which preferences or needs would lead people to seek care in each sector. This perspective leads to conclusions that cannot be drawn from patient data, because it is designed to analyse outcomes from the options that patients do not actually take up.

There is a widespread view that the public sector in India provides poor quality care, which in turn has led patients towards the private sector.16 57 Our study shows that such generalities hide substantial variation within the public sector and across outcome measures. In terms of proportions of patients who were correctly managed, the public sector in Mumbai performed much better with microbiological testing, and adherence to national standards. For case 1, the public sector relied on microbiological tests while the private sector preferred CXR; for case 2, public sector providers, consistent with RNTCP guidelines, asked for a sputum test first. We find that on metrics of patient-centred and procedural care, such as the time spent with the patient or the completion of checklists, the private sector seems to perform slightly better.

Furthermore, we did not find substantial differences between the public and private sector in reported patient

Figure 5 Standardised regression comparison of public hospitals and private sector. This figure reports the results of a series of regressions using both the public hospital interactions (N=76) and private hospital interactions (N=633). Each point reports the coefficient for the indicator variable of the private sector and the corresponding CI. All measures are standardised to mean 0 and SD 1 for illustration purposes. Estimates are controlled for individual standardised patient (SP) ID and the case scenario; SEs are clustered by facility. The measures are grouped into four families for further error correction: family 1 are the appropriate clinical management outcomes; family 2 are the medication use outcomes; family 3 are the subjective experience measures; and family 4 are the unassociated characteristics. Each family’s CIs are extended to the appropriate Bonferroni interval for the number of simultaneous hypothesis; and the p values are considered significant if they satisfy the Benjamini-Hochberg step-up procedure (including values that may not be considered significant under their own Bonferroni interval). Measures are sorted by the magnitude and direction of the estimated coefficient. The STCI management measure is constructed as 1 for each case 1 interaction that received a referral, a chest X-ray, a sputum AFB test, or an Xpert CBNAAAT test or other drug-susceptibility test; as 1 for each case 2 interaction that received a referral or an Xpert CBNAAAT test or other drug-susceptibility test; and 0 otherwise.

Family 1 Bonferroni correction showing confidence intervals for: 99.29%
Family 2 Bonferroni correction showing confidence intervals for: 98.33%
Family 3 Bonferroni correction showing confidence intervals for: 99.50%
Family 4 Bonferroni correction showing confidence intervals for: 97.50%

Colored markers indicate significant Benjamini-Hochberg p-value at FDR α = 0.05.
experience—overall SP ratings were identical across all sectors as were behaviours on specific index outcomes, such as cellphone use during the patient interaction. Both public and private sectors had low use of fluoroquinolones and steroids but similarly high use of broad-spectrum antibiotics. This is consistent with the previous study using SPs in the public and private sector in India.¹⁶

One interpretation is that care in these two sectors is differentiated by the extent to which doctors follow official guidelines and protocols (in the public sector) versus a more individualised attempt to diagnose the patient prior to the use of tests. For instance, doctors in the public primary care centres make a quick assessment and immediately ask patients to get a sputum test, which is consistent with RNTCP or NTEP guidelines for the public sector in this case.

Our results highlight a fundamental difference between public health rationales and equilibrium patient demand and provider perceptions of that demand, particularly within the comparison between private sector providers and public hospitals. Specifically, the data support the view that patients who report with a 2-week cough and fever in the public sector will immediately be referred for a sputum test. This is the correct protocol-driven response

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**Figure 6** Standardised regression comparison of public dispensaries and private sector. This figure reports the results of a series of regressions using both the public dispensary interactions (N=88) and private hospital interactions (N=633). Each point reports the coefficient for the indicator variable of the private sector and the corresponding CI. All measures are standardised to mean 0 and SD 1 for illustration purposes. Estimates are controlled for individual standardised patient (SP) ID and the case scenario; SEs are clustered by facility. The measures are grouped into four families for further error correction: family 1 are the appropriate clinical management outcomes; family 2 are the medication use outcomes; family 3 are the subjective experience measures; and family 4 are the unassociated characteristics. Each family’s CIs are extended to the appropriate Bonferroni interval for the number of simultaneous hypothesis; and the p values are considered significant if they satisfy the Benjamini-Hochberg step-up procedure (including values that may not be considered significant under their own Bonferroni interval). Measures are sorted by the magnitude and direction of the estimated coefficient. The STCI management measure is constructed as 1 for each case 1 interaction that received a referral, a chest X-ray, a sputum AFB test, or an Xpert CBNAAT test or other drug-susceptibility test; as 1 for each case 2 interaction that received a referral or an Xpert CBNAAT test or other drug-susceptibility test; and 0 otherwise. AFB, acid-fast bacillus; STCI, Standards for TB Care in India.

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from a public health or technical point of view, as similar ‘rule-based’ triage protocols have been shown to reduce mortality from acute coronary syndrome.58–60 However, the likelihood that someone with 2 weeks’ cough in India has TB (without any additional risk factors) is low. Patients may be more motivated to undergo testing if they feel that the healthcare provider is sufficiently attentive to their needs. So, spending more time with the patients and asking more questions and doing basic exams might be helpful in increasing client satisfaction and client retention. This may also attract more people with TB to the public sector.

Since the public sector offers higher-quality TB care from a technical perspective, its free, spare capacity might be filled by demand-side strategies to increase patient demand for public TB services. This capacity is potentially evidenced by the low waiting times in public dispensaries, although not necessarily at higher level facilities like hospitals. One way to do this would be to focus more on patient-centred care in terms of more convenient clinic timings, more time spent with clients, better history-taking and counselling. Recently, MCGM has started to engage TB survivors to improve counseling services once people are diagnosed to have TB. This type of service might improve client satisfaction and retention within the public system. Conversely, given the high volume and revealed patient preferences for care in the private sector, public-private mix interventions should focus on encouraging private providers to notify TB cases, and use microbiological tests such as sputum smears, molecular diagnostics, and DST. This is already being done across India via public-private mix (PPM) programs.

Although this is only the second study to examine public and private sector differences using SPs in India (and the first for urban India), there are several important limitations to the scope of the study. This type of SP study design is not intended to be representative of the average patient experience—it is designed to correctly estimate differences between performance of the average provider in the two sectors for each case presentation only. As a result, it does not account for complex patient pathways, additional potential variation or interaction with patient characteristics like social or demographic variation, accessibility and affordability, complex comorbidities or extended care pathways. For example, if providers first ask for a sputum smear and then ask for Xpert or culture DST subsequently, such sequential interventions will be missed by our cross-sectional design, which only covered first-time SP interactions. Also, the cross-sectional nature of the SP study will not capture the entire patient experience over 6 months of treatment, nor measure quality of treatment support (eg, adherence support), nor capture the costs involved in seeing multiple providers.

The SPs also do not pursue any follow-up care recommended by the providers, so the final standard of care may evolve over follow-up visits with the providers, or change because patients switched providers (including due to referral). Follow-up and referral behaviour have been discussed in other papers with samples and designs appropriate to these questions. These studies show that determining the ultimate quality of care for individual patients is complex and data intensive, but there are two takeaways of importance to this study. First, that single-interaction SPs like those done here are typically predictive of the same provider’s behaviour until the patient initiates a change in course.20 Second, referral chains are highly complex in terms of ultimate outcomes and require careful sample selection that we cannot track in this sample.61 For this study, our presumption was that any referral is best practice from the perspective of provider behaviour when the provider believes they cannot handle the case themselves.

However, the study accurately highlights the fundamental difference between public and private sector care for TB: a disease and health system where contagion externalities may drive a wedge between what is best for the individual patient and what is best for society as a whole and in which patient choice dynamics and private market incentives may exacerbate this problem.

Overall, our assessment is that both public and private sectors have unique advantages and limitations. While the public sector providers do a good job of adhering to RNTCP or NTEP technical guidelines (eg, microbiological testing) and offer less expensive care, the private sector providers do better on convenience and effort with patients. Public sector doctors were equally well-liked by the SPs; there was no indication that they behaved rudely or inappropriately in any manner; there was no evidence that SPs were asked to pay additional fees beyond the nominal amounts required. The use of medications (including broad-spectrum antibiotics) is equally high in both sectors, and both sectors generally avoided abusing steroids and quinolones.62

An interesting implication is that the optimal choice of providers depends on what patients believe. A patient with limited ability to pay who strongly believes that they have TB (or already diagnosed with TB) should go to public sector hospitals (or be referred to the public sector by private and informal providers), where they will receive microbiological TB testing and pay lower out-of-pocket fees, and care that is generally consistent with national guidelines. On the other hand, patients who care about convenience, or who can afford to pay may prefer the private sector. There, more extensive investigations might be done for non-TB illnesses. But this comes at a cost, and the private sector might, at times, order unnecessary tests or treatments.

Given the advantages we found with public sector TB care (ie, lower cost and higher adherence to microbiological testing and NTEP standards), it is important to also work on improving convenience and user experience for patients. This might allow a large fraction of poor TB patients to receive care in the public sector. To allow poor patients with TB to receive care without catastrophic expenditure in the private sector, public-private programs.
partnerships remain important. It is worth noting that Mumbai city has already pioneered a broad-based, successful strategy to engage private providers for TB care via a ‘Private-provider Interface Agency’ (PPIA) model. Through this effort, the programme improved quality of TB care delivered by private providers, including large increases in case notifications, microbiological testing and improved treatment completion, complemented in some cases by cost subsidies. This model is now being replicated in other parts of India via the Patient Provider Support Agency (PPSA) programme.

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Contributors Conceptualisation: MP, JD, DS. Funding acquisition: MP, JD. Data analysis: BD. Writing and original draft of manuscript: BD, DS, MP and JD. Writing, review and editing of manuscript: All authors. Guarantors: JD & MP

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study was granted clearance by the ethics committees at McGill University Health Centre in Montreal, Canada (REB No. 14-137-BMB), the Institute for Socio-Economic Research on Development (ISERDD) in New Delhi, India, and the Georgetown-MedStar IRB System (STUD000001982). Public sector field work was done as part of routine service quality assessment, with engagement of the Municipal Corporation of Greater Mumbai (MCGM). All provider information was treated with confidentiality and not shared in any analysis or report. All the SPs were hired as field staff and participated in training and refresher training in order to mitigate any potentially harmful events, such as injections, invasive tests and consumption of medicines during visits. As described in prior publications, we sought and received a waiver of provider informed consent based on the research ethics provisions from the Government of Canada Panel on Research Ethics and the ethics committees approved the waiver, since (1) combining informed consent with the congregation of providers during association meetings and the implementation of TB interventions during the study period posed threats to the scientific validity of the study objectives as well as to the risk of SP detection, and (2) there was no more than minimal risk of participation to the SPs, providers or other patients, as reported in prior studies.

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Data availability statement Data are available in a public, open access repository. All questionnaires and case scripts are available from the authors on request. Individual deidentified interaction data, including data dictionaries, will be publicly available online. All variables needed to re-create the results reported in this article will be included, as will the code required to reproduce these results. Data will be available indefinitely on publication to anyone who wishes to access the data for any purpose. The data and code can be accessed and cited at https://doi.org/10.5281/zenodo.4441148.

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Supplemental Appendices for:
Tuberculosis diagnosis and management in public and private health care sectors in Mumbai, India: A cross-sectional standardized patients study

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Appendix – Reflexivity Statement

1. How does this study address local research and policy priorities?

Tuberculosis is a leading killer of people in India, and no country has a higher TB burden than India. Mumbai city has India’s biggest burden of drug-resistant TB. So, the study does address a key local and national priority.

2. How were local researchers involved in study design?

The study done in partnership with the Mumbai city government (Municipal Corporation of Greater Mumbai – MCGM), and MCGM partners were involved in the design of the study, and in the interpretation and writing of the results. Six MCGM experts are coauthors of the paper, including DS, the second author. The standardized patient (SP) data collection was also conducted by a team in India (ISERDD).

3. How has funding been used to support the local research team?

The local research team in India was funded to conduct the standardized patient research. Apart from paying the SPs, there were no other major expenses.

4. How are research staff who conducted data collection acknowledged?

All MCGM team members who collaborated as included as co-authors, and the ISERDD team that conducted the SP data collection are acknowledged in the paper.

5. Do all members of the research partnership have access to study data?

All members of the partnership have access to data. The data and code can be accessed and cited at https://doi.org/10.5281/zenodo.4441148.

6. How was data used to develop analytical skills within the partnership?

Data analysis was done by the team at Georgetown university. As such, there was no analytical skill development in this specific project.

7. How have research partners collaborated in interpreting study data?

Study results were shared with the MCGM team and multiple teleconferences were held with their lead (DS).

8. How were research partners supported to develop writing skills?

While there was no plan to refine the writing skills, our partners made extensive edits to various iterations of the manuscript.

9. How will research products be shared to address local needs?

This paper will be published as open access. The MCGM team will share the study results within their TB program and use it for quality improvement of services.
10. How is the leadership, contribution and ownership of this work by LMIC researchers recognised within the authorship?

Six MCGM experts are coauthors on the manuscript, with DS being the second author.

11. How have early career researchers across the partnership been included within the authorship team?

The team includes early career and senior authors, in all the institutions involved.

12. How has gender balance been addressed within the authorship?

Eight authors are female and four authors male.

13. How has the project contributed to training of LMIC researchers?

The ISERDD team in India collected the data, and all the SPs were hired as field staff and participated in training and refresher training in order to mitigate any potentially harmful events, such as injections, invasive tests, and consumption of medicines during visits.

14. How has the project contributed to improvements in local infrastructure?

This project has not directly contributed to improvements in local infrastructure.

15. What safeguarding procedures were used to protect local study participants and researchers?

All provider information was treated with confidentiality and not shared in any analysis or report.
Appendix A1

Fieldwork Details

A1.1 Description of SP Case Scenarios

For this study, two tuberculosis (TB) case scenarios were developed to document the level and variation in quality of care for TB among sampled providers. (These two cases have been presented in several of our team’s previous publications.) For each case, both the clinical case presentation and social contexts were developed and agreed upon by a technical advisory group, which included clinicians, economists, anthropologists, experts in international and national TB guidelines, and other stakeholders. The two cases were:

1. **Case 1 (Naïve TB Suspect)** – A classic case of presumptive TB with 2-3 weeks of cough and fever. The SP presents to the providers and begins the interaction with the opening statement: “Doctor, I have a cough that is not getting better and some fever too.”

2. **Case 2 (MDR Suspect)** – A classic case of presumptive TB with 2-3 weeks cough and fever, and, if asked, a history of previous incomplete TB treatment, which would raise the suspicion of multi-drug-resistant TB.

   (a) **When presenting at Private Facility:** The SP begins the interaction by saying: “Doctor, I am suffering from a bad cough. One year earlier, I had the same – and I was treated at a government hospital – they told me it was TB. I took the medicines then and was better but now the cough has returned.”

   (b) **When presenting at Government Facility:** The SP begins the interaction by saying: “Doctor, I am suffering from a bad cough. One year earlier, I had the same – and I was treated by a private practitioner – they told me it was TB. I took the medicines then and was better but now the cough has returned.”

A1.2 SP Recruitment, Script Development, and Training

A1.2.1 SP Recruitment

For this study, 10 individuals (3 women) conducted fieldwork between 28/9/2018 and 17/1/2019 in the private sector and between 25/2/2019 and 14/3/2019 for the public sector. For these interactions, 5 SPs (2 women) were Case 1 and 5 SPs (2 women) were Case 4. Some SPs had prior experience as they had participated in our validation study in Delhi (Das et al. 2015) and/or other SP studies assessing quality for other health conditions aside from TB. SPs were originally from...
Delhi (1) and the Indian States of Bihar (4) and Maharashtra (5). Primary languages spoken by the SPs included: Hindi (6), Marathi (5), Magahi (2), English (1), and Bangali (1).

During the recruitment process, all potential SPs underwent a health screening questionnaire and checkup, and all SPs in the final cohorts were seemingly healthy, which meant they had no apparent health conditions that could confound the case presentation and interaction with providers. The SPs, although recruited specifically to fit each case scenario and corresponding narrative, differed in age, gender, height, and weight. The average age of all the SPs was 35.5 years. The youngest was 25; the oldest was 51. The 7 men weighed 50 to 61 kilograms and were 162 to 178 centimeters tall. The 3 women weighed 50 to 65 kilograms and were 142 to 160 centimeters tall.

**SP Script Development**

The following text is an edited version of the Supplemental Appendices from Kwan et al. (2018) and Das et al. (2015), tailored for this study. Each SP case scenario described above was coupled with a script. Each script is a narrative that describes the social and family contexts of the patient. The scripts were developed under the guidance of an anthropologist (VD) with active supervisor and SP participation. Together, the case scenarios and scripts were piloted in our validation study in Delhi as presented in Das et al. (2015). They were again refined based on field and data management lessons from Delhi and again during and after training in Patna and Mumbai for the study presented in this paper.

The two most important considerations for script development that were also tightly linked to SP training were: First, the clinical symptoms and case history had to reflect the social and cultural milieu of which the SP was assumed to be a member, and second, the presentation of symptoms and answers to history questions had to be consistent with biomedical facts about the disease. On the former, SPs brought a lot of socially appropriate understanding of the local vocabularies through which symptoms were to be presented and also about typical life histories that would correspond to the age, gender, caste, religion and class of the character that the SP was portraying. As a simple but crucial example, people among the strata the SPs were drawn from do not often use thermometers to measure temperature but report fever on the basis of the sensation of heat and rapid pulse. The inputs by SPs in script development were crucial from this perspective.

The latter issue was to train SPs to present symptoms and answer questions pertaining to case history that were medically correct. For example, all opening statements and questions pertaining to the type of cough and its duration were standardized. A critical part of the training was to help SPs distinguish between questions to which answers could be improvised but had to be appropriate to the social role of the SP and answers that had to be given using local idioms but in a standardized format without any alterations.

The dual aim of presenting the disease in a manner that was not misleading and avoiding detection were largely successful because the reasoning behind both objectives was carefully and repeatedly explained to the SPs and because of their active involvement in the script development and hands-on training. SP case scripts are available from the authors upon request.

**A1.2.2 SP Training**

The following text is an edited version of the Supplemental Appendices from Kwan et al. (2018) and Das et al. (2015), tailored for this study.

To portray the two SP cases, the individuals recruited as SPs were trained in Mumbai to finalize the case presentation given their knowledge of context, internalize the scripts and cases, be able to
debrief with a supervisor within 1-2 hours of the interaction, and present in clinical settings in a way that would avoid any potentially harmful risks and detection. Thus, SP training was designed with four specific aims:

1. To ensure the SPs correctly present the cases in a standardized way;
2. To ensure the SPs accurately recall the interaction that occurred with health care providers;
3. To ensure SPs avoid both detection or any suspicion that the interaction was not genuine; and
4. To ensure SPs are prepared to avoid potentially harmful risks that can occur to them.

The first two aims were achieved through extensive classroom training in case presentation and recall. Classroom training was complemented with mock interviews and followed by live supervised dry runs in the field at clinics not sampled for the study. Our pilot study in Delhi described in Das et al. (2015) also included the use of tape recorders in a selected subset of interactions, which we used to verify that the results reported on the structured questionnaires were accurate reflections of the clinical interactions.

For the third aim, SPs were carefully instructed to avoid detection by the following methods. First, our recruitment strategy ensured that SPs came from low-income areas or slums from the same cities in which the project was located, so they could easily pass for genuine and local patients, but the areas from which they came were located far from the field sites, so they would not be personally known in the areas they conducted interactions. Second, supervisors for SP fieldwork traveled into the field for ‘scoping exercises’ before any of the SP interactions were conducted. These scoping exercises helped supervisors to familiarize themselves with landmarks, clinic locations and addresses, general setting, operating hours, length of potential wait time or queues, need for clinic appointments, and other potential issues that could pose challenging to the SP interaction. Based on scoping, the team ensured that SPs were set up to conduct as-successful-as-can-be interactions. Third, during the training, time was organized such that SPs could internalize the characters for each case and the details of their mock stories through which the character was made alive to them. In mock interviews during training, supervisors added unscripted questions with regard to the patient’s family or neighborhood details, which SPs were able to answer spontaneously because they were of the actual social background that was being approximated in the characters they were portraying. Finally, dry runs were conducted in which the supervisor was present in the shop on the pretense of buying something, such as toothpaste or an over-the-counter cough syrup, and thus could watch the interaction and use additional training time to improve the SPs’ presentations of the cases.

For the fourth aim, SPs participated in active discussions on risk mitigation strategies. Together with the supervisors, the SPs brainstormed what they could do to mitigate risks or avoid situations that could be abnormal. They were then extensively trained on these and additional risk mitigation strategies. (Communication on these matters were prioritized and extended into the data collection period. Throughout the data collection period, which was weathered with scorching heat at times above 43°C/110°F, high humidity, annual monsoons, and flooded roads, supervisor and SP meetings would occur near weekly. These meetings provided additional opportunities to discuss potential issues as a team and how to mitigate them as they were encountered in the field.)

All of these individuals took part in a comprehensive and rigorous 10-day training, which included 3 days of dry runs and was held in Mumbai. The entire standard training was done in Hindi, since even Marathi-speaking individuals were expected to encounter doctors speaking in Hindi, and after classroom training, Marathi-speaking SPs went over scripts and exit questionnaires
in Marathi, followed by dry runs in Marathi. Dry runs were conducted outside of the wards selected for the sample. There were several full meetings for SPs and supervisors, and refresher trainings were conducted every time a new schedule was provided to the field team, approximately every three weeks.

### A1.2.3 Rationale for Approved Waiver of Provider Informed Consent

Ethics guidelines on health service audit studies state that SPs should be used in cases where the person being sent the SP is providing a service to other people and where other options have been carefully studied but cannot answer the research questions required. In addition, there should be minimal risk to the participants. Based on 10 years of research, we have demonstrated the difficulties of obtaining quality of care data without using SPs (Alderman et al., 2014). In previous SP studies, we have requested and received waivers of informed consent from ethics committees at Johns Hopkins University, Harvard University, and Duke University. Another SP study conducted at the Universidad Peruana Cayetano Heredia has also received waiver of informed consent. These waivers have been granted under the provisions for waiver or alteration of the informed consent requirements under the United States Department of Health and Human Services regulations 45 CFR 46.116(d).

Although the ideal study design would include informed consent, we sought a waiver because (a) we were sending multiple SPs to the same healthcare provider, and (b) we would be carrying out these assessments as part of a quality of care surveillance for a TB program (PPIA) being implemented by PATH in Mumbai. In this case, the consequences of potential detection were very high, as the entire 3-year study could have been jeopardized. Further, as part of the PPIA program, providers who were part of the PPIA network were to attend trainings and workshops together. This added a risk to the SP study - for example, if providers in Mumbai were consented for an SP study, the PPIA networked providers could discuss the identities and personal characteristics of the SPs. The combination of informed consent and congregation of providers at frequent intervention trainings (at times several are scheduled in one week) threatened the validity of our study as reported responses would not reflect the actual quality of care we were aiming to measure, while increasing the risk of SP detection.

We therefore worked closely with Institutional Review Board (IRB) requirements on informed consent, which is handled as per the provisions of the Government of Canada Panel on Research Ethics in the 2nd edition of the Tri-Council Policy Statement of Ethical Conduct for Research. Prior to the current study, we conducted a pilot with informed consent to validate the SP method for tuberculosis in urban India (published as Das et al. (2015) in Lancet Infectious Diseases). The results of the pilot validation study confirmed the decision to seek a waiver of informed consent in the current study. Corresponding to the requirements of Article 3.7, we documented in our pilot study that the SP approach in urban India was no more than minimal risk of participation to the SPs or providers. This was based on the following considerations: Involving Humans’ Article 3.7 entitled “Alteration of Consent in Minimal Risk Research”:

1. Opinion data from providers in the pilot demonstrated that participation in the study did not adversely affect their practice in any way.

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2. No monetary loss was incurred by the providers as the SPs, like real patients, paid the full consultation fee.

3. No added inconvenience was placed on real patients as the SPs were trained to immediately step aside if there were an emergency that demanded the doctor’s attention.

4. None of the identities of the providers or their clinics were compromised since we maintained strict anonymity in the information collected and never disclosed the identity of health care providers who participated in the study.

5. From our observations, average consultation times in our pilot were between 3 and 7 minutes, so that would only inconvenience other patients by that time.

Based on these considerations, we requested a waiver of informed consent from the IRB at ISERDD and the Research Ethics Board at McGill University. The requests for a waiver were reviewed and approved by both ethics committees, contingent upon the provision of a letter of full disclosure to be sent to debrief any provider who received an SP at the end of the study. The letter will offer health care providers a chance to further discuss any aspect of the findings or methodology and register any concerns; however, no individual data on any clinic or provider will be disclosed. Because our larger quality of care surveillance study has been extended to December 2019, this letter will be circulated thereafter.

A1.3 Sampling and Case Assignment in Private Sector

A1.3.1 Sampling in Private Sector

During the primary data collection period for this study, a Private Provider Interface Agency (PPIA) in Mumbai (led by PATH) was implementing an urban TB program funded by the Bill and Melinda Gates Foundation (BMGF). As the program began, the PPIA were mapping, recruiting, and enrolling private sector providers into provider networks across Mumbai. At the time of sampling for our study, we decided to stratify our provider sample by PPIA program enrollment. From lane-by-lane mapping exercises conducted by the PPIA, which resulted in a universe list of private sector providers in Mumbai, we obtained lists of enrolled and not-enrolled AYUSH practitioners in the PPIA program and merged them to produce a complete sampling universe stratified by PPIA enrollment status.

We then restricted these lists based on eligibility criteria for the SP study: AYUSH practitioners eligible for the study were those who had not yet been enrolled into the PPIA program as of DD MM YYYY and those who had practices in wards of interest for the PPIA expansion at the time. The description of the program serves to support sampling weights (Table 1) applied to achieve the urban area estimates for Mumbai but stratified findings based on PPIA program enrollment are not presented in this paper.

Between January and June 2014 in Mumbai, PATH contracted out street-by-street mapping activities in Mumbai of private health facilities, originally planned for 12 high TB burden wards and 3 high-slum population wards, which account for 86% of the Mumbai slum population and 70% of the Mumbai population. The mapping activity was done by two community-based organizations (Alert India and Maharashtra Janavikas Kendra (MJK)). Mapping was initiated in G-North (high TB burden), M-East (Chembu slums and presence of Chest Physicians), P-North, and S wards. By June 2014, the exercise resulted in a provider universe of 8897 locations in 18 wards, which were 12 fully mapped wards, partial mapping of H-East, P-South, and R-South wards, and minimal
mapping in the remaining wards. Of the 8897, 2804 were chemists, 3591 were AYUSH practitioners (BAMS, BUMS, BHMS, DAMS, DHMS, LCEH), 671 less than fully qualified allopathic providers, 1290 MBBS, 463 MDs, and 78 chest physicians.

Since the network established by PATH aimed to move with the providers regardless of where and in how many facilities they practiced, the final QuTUB sampling frames were the result of thorough cleaning, scoping, and verification exercises in collaboration with the PATH team. Before fieldwork began, an individual (R) hired by ISERDD together with a representative from AHI (NC), both from Mumbai, heavily scoped the field to check for addresses and to gather additional information that would be useful before the ISERDD field team moved to the city. The information that was gathered included, but was not limited to: identifying potential SP recruits, looking at the transportation systems, reporting the setup of clinics and health facilities, collecting GPS locations of providers, and correcting provider and facility names while capturing consulting fees, first points of contact in a facility, and outpatient department (OPD) timings.

Four wards out of the 15 original focus wards of the PPIA program were selected for the majority of Mumbai SP surveillance to minimize geographical spread of the SP study. This was because increasing the geographic scope of the city would increase logistical difficulties as presented by Mumbai’s transit system and scale. In mid-January 2015, a meeting was conducted between the PATH and QuTUB teams to agree on the four study wards. After assessing upcoming PPIA program efforts, access to transportation, mixture of unregistered and registered slums, and available data on the wards (e.g., total ward population, slum population, and proportion of slum population figures as per the 2011 census), F-North, K-East, L, and P-North were selected. Relative to other mapped wards, these four wards have a higher slum population (with the exception of F-North), and they also have more providers and more networked providers. Together, these wards were a good representation of areas for PPIA Mumbai efforts. As noted in sections below, these wards were used for constructing the AYUSH sample.

In addition to PPIA hubs, there were non-networked private hospitals and single provider private clinics that met the PPIA hub criteria (i.e., in-house or nearby digital X-ray, pharmacy, and chest physician) and could provide a reasonable comparative ‘apples-to-apples’ estimate of the quality of major facilities not enrolled in the program. The list of non-PPIA hubs was created with the assistance of PATH, who verified whether each one would be a comparable candidate for enrollment into the program. The list consisted of health facilities that met the criteria for the PPIA network and located in the four study wards: F-North, K-East, L, and P-North wards. An initial list of eligible but non-PPIA ‘hubs’ was created by PATH in January 2015, and this list was revisited and updated in April 2015. The process of updating the list at the end of April 2015 involved PATH team members and FOs going through the list and removing any facilities that had been networked since July 2015, when SP interactions began for the eligible, yet non-PPIA hubs.

The FOs also went through the full universe list again to make sure the PPIA networking criteria still applied, and any duplicates were removed (at least 12 sets of duplicates or triplicates). The final list was frozen on April 28, 2015, and the QuTUB team flagged facilities that were ineligible for the SP study (i.e., children hospitals) before establishing the sampling frame for non- PPIA hubs. The final list contained 78 eligible, yet non-PPIA hubs, and 11 were excluded from actual SP visits, since they were children or orthopedic hospitals and the SP cases did not reflect pediatric TB or extrapulmonary TB.

Furthermore, we ascertained how PPIA providers (MBBS and higher) practice at PPIA hubs and non-PPIA locations. To expand on this, it was common for individual PPIA providers practicing at PPIA hubs to also have other private practices, which we deem as ‘non-PPIA locations’ or ‘non-networked locations’. These are locations where the providers were confirmed to not be networked regardless of being networked in the PPIA at a different location. To confirm the
PPIA status of these private practices, an initial mapping with verification activities for these ‘non-networked locations’ occurred between April and July 2015. For initial mapping, two PATH team members in collaboration with the QuTUB team procured a list of practices for 150 PPIA providers, who were MBBS, MDs, and MD/Chest Physicians and who were all networked at known PPIA hubs. Of the 150, 136 met the inclusion criteria (i.e., providers who see adult pulmonary patients) for the SP study.

In terms of the process, FOs conducted the non-networked location mapping in two phases. The first phase, which was circulated to the QuTUB team on July 3rd, contained 153 locations for 62 of the 136 eligible providers and was collected from FOs in R South, N, G North, M East, M West, and F North wards (providers were interviewed at their networked location linked to a ward and a corresponding FO). This resulted in a list of non-networked locations for 62 providers where: 18 providers had 1 location; 21 providers had 2 locations; 10 had 3; 6 had 4; 4 had 5; 2 had 6; and 1 had 7. PATH team members reviewed these locations to determine their networked statuses, and AHI and ISERDD teams conducted scoping for eligibility into the SP study (e.g., government facilities were ineligible for the SP study). The second phase contained details for the remaining 74 providers. For the verification activities, ISERDD and AHI (NC) did on-ground scoping to double-check for any government facilities, ensure there were no duplicates, confirm outpatient hours of the providers, and check whether providers had on-call duties at any of the locations. At the time of verification, ISERDD had already completed all PPIA and non-PPIA hub walk-ins, and favorably, the team was also able to map whether or not any of these non-networked locations had already been visited as a non-PPIA hub. If so, facility IDs matching with those non-PPIA hubs were mapped back to the sample and analytically used also for ‘non-networked’ interactions.

### A1.3.2 SP Case Assignment in Private Sector

Our sampling was restricted to AYUSH practitioners and to four study wards as agreed with PATH. Engagement statuses of AYUSH were frozen on January 24, 2015. There were three samples that resulted: 1. Uniform-probability random sample of non-PPIA AYUSH in K-East and L wards 2. Uniform-probability random sample of non-PPIA AYUSH in F-North and P-North wards 3. Census of PPIA AYUSH in all four wards

Schedules were given to ISERDD in two groups: AYUSH in K-East and L wards in one group, and AYUSH in F-North and P-North wards in a second group. For both groups, reserves were provided for the non-PPIA practitioners based on ward. All AYUSH interactions were randomly assigned to be conducted either in the morning or evening hours.

Next, general walk-ins without appointments to hubs were conducted by having the SP enter the health facility and go to the doctor suggested by the receptionist or intake nurse, without regard for PPIA status of the provider, at both PPIA-registered facilities and non-PPIA facilities. There were two samples: 1. Non-PPIA hub walk-ins at purposively selected locations in the four wards 2. PPIA hubs walk-ins (census of all PPIA hubs) across 15 wards

All hub walk-ins were conducted during specific times that were given to the field team. For PPIA hubs specifically, walk-ins were conducted during hours any networked doctor were scheduled to practice, unless an appointment was scheduled by the receptionist or intake nurse. If, during the consultation, the SP was told to go to another doctor at that moment, the SP was instructed to do so and any aspect of the interaction was also recorded on the same form. On May 1, 2015, before sending SPs to the field, ISERDD supervisors met with the PATH team to go over all the PPIA hubs, their locations, the facility layout, and the networked providers.

Walk-ins were first conducted among 100 PPIA hubs. Only Case 1 interactions were conducted. Once PPIA hub walk-ins were completed, walk-ins were done at non-PPIA hubs. Since we had
to still confirm whether these facilities would accept a presumptive TB walk-in patient, all non-PPIA hubs were sent an SP portraying Case 1. Only after Case 1 interactions were successfully completed, we randomly assigned half to receive Case 2 and then randomly assigned another half to receive either Case 3 or Case 4. None of the SPs trained as Case 4 carried a sputum report to the non-PPIA hubs. To avoid any risk of the same SP running into the same provider across locations, the following field protocols were put in place: (1) SPs were to remain cognizant and maintain a list of providers they had visited, and (2) supervisors were to review a provider directory when assigning SPs for interactions. At least two PPIA providers were seen by SP1 during the non-PPIA walk-in, while 54 of 93 PPIA facility walk-ins resulted in the SP seeing a PPIA provider.

We then targeted additional PPIA providers at facilities where they practiced as part of the PPIA (see Appendix Figure A1). Updated lists for providers, mostly MDs and MD Chest Physicians, networked by the PPIA were procured in January 2015 and then again in April 2015. A total of 136 providers at PPIA hubs were eligible for the SP study (ineligible providers, such as pediatricians and orthopedist specialists, were excluded) across 100 health facilities, resulting in 98 successful interactions. When scheduling the providers and locations that would receive SPs, our top priority was to maximize the total number of interactions we could conduct while reducing risk of detection. In order to do this, we had to work around three issues: (1) providers who were networked at multiple locations, (2) PPIA hubs that had more than 3 networked providers, and (3) providers selected who had already been seen during the walk-in visits. Selecting the eligible providers was done manually and checked several times.

Among the 136 providers, we were aware of 19 who were networked at multiple locations (13 providers at 2 facilities, 2 at 3, 4 at 4 = 48). To maximize the total number of interactions, we then selected these 19 providers at the facility that had the fewest number of other practicing doctors. Among the PPIA hubs, there were six hubs considered as large, defined as having more than 3 networked providers (2 hubs with 5 providers, 1 with 7, 1 with 9, 1 with 10, 1 with 11 = 57). To avoid detection, we decided that no PPIA hub would receive SPs for more than three providers. In order to select the three providers at the large hubs, we attributed the eligible networked doctors to the number of TB cases they had reported to the PPIA program and ranked them from highest to lowest. We then removed all the providers located at multiple locations since we had already selected another one of their networked locations. Three providers were then selected by taking the highest notifying, the lowest notifying, and a random provider who had not been selected yet and who could be either notifying or not to the program.

All PPIA providers at PPIA hubs received SPs portraying Case 1 (however, if SPs as Case 1 had already seen the networked doctor during a walk-in, we did not assign another Case 1 to this doctor, and the assumption was the walk-in observation for Case 1 could be used for the provider targeted interaction for Case 1). A random half received Case 2. Another random half received Case 3 with a sputum report in addition to Case 4 without a sputum report, with the other half was assigned to not receive Case 3 and to receive Case 4 with a sputum report. To minimize detection risk, the field team conducted interactions at the six large facilities last.

Finally, we specifically targeted PPIA providers at their other practice locations where they were not considered part of the PPIA (non-networked locations or “NNLs”). From the verified list of non-networked locations, NNLs that were government facilities and outside Mumbai city were excluded for sampling. Some of the interactions, though not deliberately scheduled for ISERDD, took place during the walk-ins at non-PPIA locations when providers who also practiced within the network were encountered by chance. Scheduling for ISERDD was done in 4 waves as the mapping was done in parallel to fieldwork, and verification process was also done with SP1 case.

PPIA providers at NNLs were scheduled to receive Case 1 before any other cases. This was done to serve as a final verification for location eligibility. Case 1 was randomly assigned to one
Table A1.1: Sampling and SP Case Assignment in Public Sector

<table>
<thead>
<tr>
<th>Level</th>
<th>Total in Universe</th>
<th>Number Sampled</th>
<th>Number of Case 1 visits per facility</th>
<th>Number of Case 2 visits per facility</th>
<th>Total Number of Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical colleges</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Peripheral hospitals</td>
<td>16</td>
<td>16</td>
<td>2</td>
<td>2</td>
<td>64</td>
</tr>
<tr>
<td>Primary health dispensaries</td>
<td>175</td>
<td>44</td>
<td>1</td>
<td>1</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>195</td>
<td>64</td>
<td></td>
<td></td>
<td>168</td>
</tr>
<tr>
<td>Total visits</td>
<td></td>
<td></td>
<td>84</td>
<td>84</td>
<td>168</td>
</tr>
</tbody>
</table>

NNL for the providers who SPs visited in the previous sample at a networked location. If the provider was known to have multiple NNLs, we gave preference to the location where he or she was not on-call or working at an actual large PPIA hub before random selection, since large PPIA hubs had already received at least 3 provider-specific SP1s. All on-call locations and other NNLs for each provider was made available as a reserve list to the field team. All PPIA providers at their NNLs were assigned Case 1. The half that did not receive Case 2 at the networked location were assigned to receive them at the NNL. The half that received Case 4 with a sputum report were assigned to receive Case 4 without a sputum report.

A1.4 Sampling and Case Assignment in Public Sector

The public sector sample includes a census of medical colleges managed by MCGM (N = 4), a census of peripheral hospitals managed by MCGM (N = 16), and a random sample of 25% (N = 44 of 175 total) of primary health dispensaries managed by MCGM. This sample was determined by our team in collaboration with MCGM in early 2019 (see Table A1.1). Each medical college or peripheral hospital was assigned two Case 1 and two Case 2 interactions. Each primary health dispensary was assigned one Case 1 and one Case 2 interaction. In all, a total of N = 168 interactions were assigned in the public sector (N = 84 Case 1 visits and N = 84 Case 2 visits; N = 16 in medical colleges, N = 64 in peripheral hospitals, and N = 70 in primary health dispensaries).

A1.5 Medication Coding

After SP interactions were completed with sampled facilities in both cities, a list of all labeled medicines prescribed or offered to the SPs was coded and classified by the team. Medicine received as unlabeled and in loose pills form, such as those received by some AYUSH practitioners in Mumbai, were placed into small plastic bags by the SP field team with one bag for each pill type (defined as same color and shape) and marked as unlabeled on the SP exit questionnaire. The team also determined whether such medicines given included at least one antibiotic or steroid.

In the public sector, medications are given for free as part of the consultation from the facility pharmacy when they are prescribed. In the private sector, practice varies widely. Some providers “bundle” costs; some have attached pharmacies; and some give prescriptions redeemable at outside pharmacies. All costs including medication are included in the statistics reported here. SPs always accepted or purchased medications given during the consultation; in prescription cases, they priced medications at the nearest pharmacy but did not purchase them. When possible, medication costs are individually itemized in the data we provide to accompany the article.
Appendix A2

Standardized Patient Case Scripts
Ravi (Male)

Ravi is a 35 year old male who has studied up to 10th standard. He is the owner of a small tea shop. Today, in the morning like any other day, when he leaves for his work, his wife Rekha, handing him his lunch box asks, "why are you not eating your lunch properly - you get most of it uneaten every day"? Ravi replies, "I have cough and seem to have lost my appetite". Ravi’s family is small. It consists of his wife and two children, aged six (daughter) and four (son) and they live in a two room house which he owns. His business at the tea stall is doing well as he is able to earn on average rupees 12000 - 15000 per month. Generally Ravi keeps good health. He has not had any major health problems or any chronic Illness. His wife and children too are in good health. But since last 2-3 weeks he is suffering from cough which is more or less present during early morning and night, and it also has expectoration though that does not have any color in it and is clear. He also has low grade mild fever, on and off, which gets worse during the evening time. But since this problem started he feels a bit tired and also has lost some weight, as his clothes have got a bit loose. He does not suffer from any associated chest or body pain. He smokes 4-5 beedis during the day since last 8-10 years and drinks alcohol once or twice in the month. His relationship with his wife is good. He loves her very much. He has a cheerful and an easy going personality and off, which gets worse during the evening time. But since this problem started he feels a bit tired and also has lost some weight, as his clothes have got a bit loose. He does not suffer from any associated chest or body pain. He smokes 4-5 beedis during the day since last 8-10 years and drinks alcohol once or twice in the month. His relationship with his wife is good. He loves her very much. He has a cheerful and an easy going personality as he is worried about his cough and fever and visits a doctor nearby.

Ravi's family is small. It consists of his wife and two children, aged six (daughter) and four (son) and they live in a two room house which he owns. His business at the tea stall is doing well as he is able to earn on average rupees 12000 - 15000 per month. Generally Ravi keeps good health. He has not had any major health problems or any chronic Illness. His wife and children too are in good health. But since last 2-3 weeks he is suffering from cough which is more or less present during early morning and night, and it also has expectoration though that does not have any color in it and is clear. He also has low grade mild fever, on and off, which gets worse during the evening time. But since this problem started he feels a bit tired and also has lost some weight, as his clothes have got a bit loose. He does not suffer from any associated chest or body pain. He smokes 4-5 beedis during the day since last 8-10 years and drinks alcohol once or twice in the month. His relationship with his wife is good. He loves her very much. He has a cheerful and an easy going personality as he is worried about his cough and fever and visits a doctor nearby.

Ravi's family is small. It consists of his wife and two children, aged six (daughter) and four (son) and they live in a two room house which he owns. His business at the tea stall is doing well as he is able to earn on average rupees 12000 - 15000 per month. Generally Ravi keeps good health. He has not had any major health problems or any chronic Illness. His wife and children too are in good health. But since last 2-3 weeks he is suffering from cough which is more or less present during early morning and night, and it also has expectoration though that does not have any color in it and is clear. He also has low grade mild fever, on and off, which gets worse during the evening time. But since this problem started he feels a bit tired and also has lost some weight, as his clothes have got a bit loose. He does not suffer from any associated chest or body pain. He smokes 4-5 beedis during the day since last 8-10 years and drinks alcohol once or twice in the month. His relationship with his wife is good. He loves her very much. He has a cheerful and an easy going personality as he is worried about his cough and fever and visits a doctor nearby.
Rekha (female)

Rekha is a 35 year old female who has studied up to 10th standard. She supplements her family income by stitching clothes at home. She is a little worried today as she has cough and running mild fever and thus does not feel like doing work. Her husband suggests that she should go and see a doctor to day about it. He leaves for work at his tea stall. Rekha’s is a small family unit with her husband and two children aged six (daughter) and four (son) and they live in a two room house. She has been stitching clothes since a few years as her husband’s work does not generate enough income and with her work she is able to earn an extra 4000-5000 rupees in a month. Generally Rekha has been in good health and has not had any major health problems or any chronic illness. Her husband and children too have had good health. But since last 2-3 weeks she has been having cough which is more or less present during early morning and night, and also has expectoration that does not have any color in it and is clear. She is also running low grade mild fever, on and off, which gets worse during the evening time. But since this problem started she feels tired and also has lost some weight, as her clothes have got bit loose. She does not suffer from any associated chest or body pain. Rekha has a cheerful nature and she abstains from alcohol and smoking. Her relationship with her husband is good and she loves him very much but today she is worried about her cough and fever and visits a doctor nearby.
रेखा संस्थान और मिलन-साझा स्वरूप गर्दै छ। यसको बिना भने रहेको छ र यसको साथ अभ्यास गर्नुको लागि भने रहेको छ। रेखा बिना कही हाती बिना अथवा बिना साथ अभ्यास गर्ने संभव रहेको छ। रेखा पर रेखा को स्वस्थ अथवा परीक्षण गर्न रहेको छ, उसका किसी भी तरह की कार्यान्वयन और कोई भक्ति विभाजन नहीं है। उसका परीक्षण और बच्चों का स्वस्थ भी अच्छा है। लेकिन रेखा को खिलाड़ी 2-3 हजारों से चौदह है, जो सबूत और रात के समय उपलब्ध होती है। उसकी खानी के साथ बलगाम भी आता है जिसका कोई रंग नहीं है, जो साफ है। उसे हका खुदार रहता है जो चढ़ा-उतारता हो लेकिन अक्सर शाम के समय दो-तीन बार होता है। जब यह रेखा को मार देने वाला हो जिसका रंग कोई नहीं है, तब तक उसे उसकी शक्ति क्रम है, जिसका उसके पड़ोसी दो-तीन होता है। उसे इस तकलीफ में किसी भी तरह का छाता का दर्द और बदन दर्द नहीं है।

रेखा हंसमुख और मिलन-साझा स्वरूप गर्दै छ और वह किसी भी प्रकार का कोई नशा नहीं करती। उसके अपने पति के साथ अच्छे संबंध है। वह उसे बहुत प्यार करती है। लेकिन आज उसके चेहरे पर अपनी खानी और खुदार को लेकर थोड़ी परेशानी है जिसको लेकर वह नजदीक डेक्कर प्रेस पायी है।

रेखा (महिला)

रेखा लिहिता-चावल येण्याचे दुसऱ्या पास ३५ वर्षीय महिला आहे। त्या आपल्या घर-खेत वाणिज्यासाठी घात शिवण काम करतात। आज रेखांच मन कामावर जाण्यासाठी तयार नहतं करण आड पण त्यांचा खोलका, हलकासा तप आणि अशक्ततेपण वाढत होता होता। हे गोष्ट त्यांनी आपल्या पत्नीने सांगितली हे क्षेत्र त्याच्या पत्नीने त्यांना आराम करायला सांगितला आणि कोणत्याही डॉक्टरांना दाखवायला सांगितले। असे बोलून त्यांचे पती स्वतःचा चहाच्या दुकानावर लिहून गेले।

रेखाच्या घरी त्यांच्या पती आणि दोन मुळ आहेत। मुळींच्या वय ६ वर्ष, आणि मुळांच्या वय ४ वर्ष आहेत। रेखा दोन खोलेच्या स्वतःचा मालाविज्य्याच्या घात राहतात। रेखा कोणतीपासून शिवण काम करून आहेत; करण त्याच्या पत्नीने चहाच्या दुकानाच्या एक्टीच्या कमाई होत नाही आणि त्या आपल्या कामापासून महिलाच्या ४ ते ५ हजार रुपये कमावतात।

साधारणपणे रेखा हयांच्या आरोग्य चांगले असते, त्यांचा कुटुंबांचा प्रकारणच्या भाग किंवा दीर्घकाळीन आज नाही आहे। त्याच्या पत्नीच्या आणि मुळांच्या आरोग्य चांगले असते। पण रेखा त्यांच्या माणसे २-३ आठव्यांपासून त्यांचा खोलका सकाकृत आणि राणीतिक वेदी जास्त तीव्र होते। त्यांचा खोल्यावरोर खाणा (बेडका) पण येथेच उचित कुटुंबांचा रंग नाही, तो पारंपरिक आहे। खोल्यावरोर त्यांचा हलकासा तप धडदे-उतारता, पण अनेको संध्याकाळच्या वेदीच्या तप जास्त होतो। जेव्हा हयांचा घडांच्या सुरू झाला तेव्हा हयांच्या घडांचा जाणवला आहे। त्यांचा अनेक वाचन य कामाचा विवेक किंवा विवेचना त्यांच्या पडपते सैल झाळे आहेत। त्यांना हया ब्राह्मणभाद्य आपल्याची प्रश्नांची आठव्हेची अंगुलुद्धी जाणवल नाही.
Opening statement: “Doctor, I have cough that is not getting better and some fever too”

History questions asked by the provider and their answers

Q 1: What is the duration of cough?

Prash 1: कितना कब से हो रही है?

Prash 1: खूपला कल्पापूर्ण आहे?

Ans 1: 2-3 weeks, more during early morning and night

Uttr 1: 2-3 सप्ताहाचे, येथे सुबह-सुबह आणि रात की ही ज्यादा होती हे।

Q 2: Are you producing sputum (bulgum)?

Prash 2: कितीक आपण बुलगम बनती हे?

Prash 2: खाकरा/बेडका/थुंकी मध्ये कफ तापाहोतो का?

Ans 2: Yes

Uttr 2: हो।

Q 3: Does the sputum contain blood?

Prash 3: कितीक आपण बुलगम मध्ये खुन आहे?

Prash 3. खाकरा/बेडका/थुंकी मध्ये रक्त पडते का?

Ans 3: No

Uttr 3: नाही।

Q 4: How long have you had fever?

Prash 4: आपण तुंडाच कब से हे?

Prash 4. आपल्याचा ताप कधीपासून आहे?
<table>
<thead>
<tr>
<th>Q4</th>
<th>Since 2-3 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>उत्तर 4</td>
<td>2-3 ऊपरेले हो गये।</td>
</tr>
<tr>
<td>Q5</td>
<td>What type of fever do you have?</td>
</tr>
<tr>
<td>प्रश्न 5</td>
<td>उबार कैसा रहता है?</td>
</tr>
<tr>
<td>उत्तर 5</td>
<td>हलका ऊबार चढ़ता उत्तरता रहता है, लेकिन ज्यादातर शाम को होता है।</td>
</tr>
<tr>
<td>Q6</td>
<td>Have you taken any medicines for your illness?</td>
</tr>
<tr>
<td>प्रश्न 6</td>
<td>क्या आपने इस तकलीफ के लिए कोई दवाई ली है?</td>
</tr>
<tr>
<td>उत्तर 6</td>
<td>नहीं।</td>
</tr>
<tr>
<td>Q7</td>
<td>Do you get any chest pain?</td>
</tr>
<tr>
<td>प्रश्न 7</td>
<td>आपल्या छाती भध्मे दुखतांम का?</td>
</tr>
<tr>
<td>उत्तर 7</td>
<td>नहीं।</td>
</tr>
<tr>
<td>Q8</td>
<td>Any loss of appetite?</td>
</tr>
<tr>
<td>प्रश्न 8</td>
<td>भूख में कोई कमी?</td>
</tr>
<tr>
<td>उत्तर 8</td>
<td>है, भूख तो कम लगती है।</td>
</tr>
<tr>
<td>Q9</td>
<td>Have you lost weight?</td>
</tr>
<tr>
<td>प्रश्न 9</td>
<td>आपलं वजन कमी झाली आहे का?</td>
</tr>
<tr>
<td>उत्तर 9</td>
<td>है, मुझे लगता है क्योंकि मेरे कपड़े ढीले हो गये हैं।</td>
</tr>
<tr>
<td>Q10</td>
<td>Any wheezing or difficulty in breathing?</td>
</tr>
<tr>
<td><strong>Q10:</strong> श्लाव घेताना /वोडताना कुठली अडचण होते का/छाती मधून घरघर (शिटी सारखा) आवाज येतो का?</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Ans 10:</strong> No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Q11:</strong> Do you smoke?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ans 11:</strong> Yes, I smoke beedis. [in case of male SP] No [in case of females SP]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Q12:</strong> How many beedis in a day?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ans 12:</strong> 4-5 beedis, I guess</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Q13:</strong> Since when have you been smoking beedis?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ans 13:</strong> Since the last 8 or 10 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Q14:</strong> Do you drink alcohol?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ans 14:</strong> Yes [in case of male] No [in case of female SP]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Q15:</strong> How often do you drink?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ans 15:</strong> कितीनी बार पी लेले हो?</td>
</tr>
</tbody>
</table>
Q 16: आपने तबाही कोई दवा ली है?
प्रश्न 16: आपने तबाही कोई दवा ली है?
Ans 16: नहीं
उत्तर 16: नहीं

Q 17: कोई आपके घर में तबाही आई?
प्रश्न 17: कोई आपके घर में तबाही आई?
Ans 17: नहीं
उत्तर 17: नहीं

Q 18: आप वाहिता हैं?
प्रश्न 18: आप वाहिता हैं?
Ans 18: काफी नहीं
उत्तर 18: काफी नहीं

Q 19: कोई आपके हाइपरटेंशन है?
प्रश्न 19: कोई आपके हाइपरटेंशन है?
Ans 19: काफी नहीं
उत्तर 19: काफी नहीं

Q 20: कोई आपके HIV-AIDS है?
प्रश्न 20: कोई आपके HIV-AIDS है?
Ans 20: काफी नहीं
उत्तर 20: काफी नहीं
Q21: Have you ever been tested for these diseases?

प्रश्न 21: क्या आपने कभी इन बीमारियों के जीवन या टेस्ट कराए है?

Ans21: Not been tested

उत्तर 21: कभी टेस्ट नहीं करवाया।

उत्तर 21: कभी तपासण्याने नाही केल्या

Q 22: Are you allergic to any drugs?

प्रश्न 22: क्या आपको किसी दवा से एलर्जी है?

Ans22: No.

उत्तर 22: नहीं।

उत्तर 22: नाही

**Important instructions to be remembered by SP**

महत्वपूर्ण बातें जो एस पी को याद रखनी है

एस पी साठी महत्वाच्या सूचना

1. ISERDD staff will identify the facility and/or the provider for the SP, where the SP will present his case alone.

ISERDD स्टाफ फीड में SP को प्रोवाइडर का क्लिनिक का नाम देगा जहाँ SP ने अपना केस करवाया है।

ISERDD स्टाफ फीड में SP ला प्रोवाइडरच्या क्लिनिक सांगितले जातील, तो SP ला एकेटेक आपल्या केस सादर कराव्याची आहेत।

2. SP should remember if the facility and/or the provider was the correct one. (for example, it was the correct location, but the name board did not match the name given or if the assigned provider was not there and the SP saw another provider)

SP को याद रखावा हे कि दो साही प्रोवाइडर के क्लिनिक गेल्या थे? (उदाहरणको लिए, जगह साही बी लेकिन बोर्ड पर लिखा नाम दिया गेला नामसोबत नाही खालील नाही दिसला था।

SPची लक्षात ठेवते आहे कि ते योग्य प्रोवाइडरच्या क्लिनिक मध्ये गेले होते का? (उदाहरणासाठी जागा बरोबर होती पण बोर्डसोबत नाव दिलेल्या नावाच्या नसून नाहीत)

3. SP must remember if the provider carried out any of the following examination?

SP को याद रखावा हे कि प्रोवाइडर ने निम्नसूचित में से कोई परीक्षण किंवा?

SPची लक्षात ठेवते आहे कि प्रोवाइडरच्या क्लिनिक सल्ल्या तपासण्याचे केल्या?

- **Pulse rate** नक्की की दर नाही एकंद्रज्ञान
- **Respiratory rate** लांबी की दर श्वसन दर एकंद्रज्ञान
### ISERDD SP1-NARRATIVE

**QuTub Project - Mumbai**

- **Auscultation of Chest** (Did the provider comment on the auscultation)
- **Blood Pressure**
- **Temperature**
- **Throat examination**
- **Weight**
- **Abdomen palpitation**

#### 4. Did the provider recommend any investigations? (If yes, SP should ask provider to write the name of the test and the laboratory. And hand over the document to an ISERDD staff.)

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest X-Ray</td>
<td>छातीचा एक्स-रे</td>
</tr>
<tr>
<td>CT Scan</td>
<td>सीटी स्कॅन</td>
</tr>
<tr>
<td>Blood - Total count, differential count- ESR</td>
<td>रक्त-टोटल काउंट, डिफरेंशियल काउंट-ई एस आर</td>
</tr>
<tr>
<td>Blood - HIV test</td>
<td>रक्त-एच आवी टेस्ट</td>
</tr>
<tr>
<td>Blood - Diabetes test</td>
<td>रक्त-डायब्युटी टेस्ट</td>
</tr>
<tr>
<td>Blood - TB Gold</td>
<td>रक्त-टी फी गोल्ड</td>
</tr>
<tr>
<td>Sputum smear examination (Sputum AFB)</td>
<td>स्पूटम स्मार एक्जामीनेशन स्पूटम एफबी</td>
</tr>
<tr>
<td>Sputum GeneXpert test</td>
<td>स्पूटम जीनएक्सपेर्ट टेस्ट</td>
</tr>
<tr>
<td>Sputum culture</td>
<td>स्पूटम कल्चर</td>
</tr>
<tr>
<td>Mantoux Test</td>
<td>मन्टूक्स टेस्ट</td>
</tr>
<tr>
<td>TB- PCR (not specific)</td>
<td>टी बी - पी सी आर (विशेष नहीं है)</td>
</tr>
<tr>
<td>Drug susceptibility test (culture, gene Xpert, line probe assay)</td>
<td>द्रुग स्पेसिफिकिटी टेस्ट (कल्चर, जीनएक्सपेर्ट, लाइन प्रोब एस्के)</td>
</tr>
</tbody>
</table>

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### 5. Did the provider give you any vouchers or referral coupons?

**का प्रोवाइडर ने SP को कोई वाणिज्य या एफेक्स उपहार दिया?**

*If yes, SP should retain the voucher or referral coupons and hand over to any ISERDD staff. On the form, supervisors will write the voucher number and name from the stamp.*

(यदि हैं, तो SP को प्रोवाइडर ने एफेक्स उपहार सामान्य कर कराना है और ISERDD स्टाफ के हाथों में सामना है)

(जरूर है, तर SP नी एफेक्स उपहार सामान्य ठेवायथे आहें आणि ISERDD स्टाफच्या हातात द्यायथे आहें)

- Treatment 
- Chest X-Ray हायचय
- GeneXpert जीनईक्स्टप टेस्ट

Please write voucher or referral coupons number and name on the stamp.

कृपया वाणिज्य या एफेक्स उपहार का नम्बर तथा नाम लिहिलें आणि ISERDD स्टाफ च्या नांमाच्या उपहाराच्या स्टांपवर.

### 6. SP must remember if personal details (Name, Mobile, Address) were given to the provider. If so, what was the full name the SP gave? (Some providers who work with the PPIA will collect this information if they identify the SP as a presumptive TB case, refer you to a lab for sputum or CXR, or refer you to certain providers.)

**SP ने याद केली की त्यांनी कोणती प्रायोगिक माहिती प्रोवाइडरला दिली आहे? जसे आपले नाव, मोबाइल नंबर, पता, जर दिला आहे, तर SP नी आपल्या नावाच्या नावाच्या सामन्याची (PPIA च्या बरोबर काम करणारे काही प्रोवाइडरसह आपली माहिती एकत्रित करतील आणि जर त्यांनी वाचले की आपण एक संबंधित TB केस आढळत तर ते आपल्याच्या छातीच्या एक्स-रे किवा धुंधीच्या तपासणीसाठी तेल मध्ये रेफर या बुळे हुए प्रोवाइडर के पास, रेफर करणे)***

1. SP लेखाला ठेवायथे आहें की त्यांनी कोणती वैश्विक माहिती प्रोवाइडरला दिली आहे. जसे आपले नाव, मोबाइल नंबर, पता, जर दिला आहे, तर SP नी आपल्या नावाच्या नावाच्या सामन्याची (PPIA च्या बरोबर काम करणारे काही प्रोवाइडरसह आपली माहिती एकत्रित करतील आणि जर त्यांनी वाचले की आपण एक संबंधित TB केस आढळत तर ते आपल्याच्या छातीच्या एक्स-रे किवा धुंधीच्या तपासणीसाठी तेल मध्ये रेफर या बुळे हुए प्रोवाइडर के पास, रेफर करणे)***

7. **SP must remember if someone at the facility completed a registration form to register the SP’s personal details such as with a call center. (Some providers who work with the PPIA will make a call to register patients.)**

**SP को याद रखावा की प्रोवाइडर ने SP की व्यक्तिगत माहिती रजिस्टर करावे किंवा फोन रेडियो एक कॉल सेंटर को फोन किया. (PPIA के साथ काम करने वाले कुछ प्रोवाइडर फोन करने के लिए फोन करें)**

(SP ग्राहकाला ठेवायथे आहें की जर कोणी फॉनेलीमध्ये कोणी SPची वैश्विक माहिती लावते की SP ची ग्राहकाला फोन करता हे PPIA बरोबर काम करता ते पेशेंट रजिस्टर कारणेच्या कारणाने कोल करतील)

### 8. ISERDD staff to mark which of the following tests was recommended by a networked provider.(Refer to networked provider/lab list)

**जी कोणता टेस्ट नेटवर्क प्रोवाइडर द्वारा करवावे के लिए बोला गया है उसे ISERDD स्टाफ को फार्म में मार्क करना है (नेटवर्क प्रोवाइडर/लेख रेफर किया)**

(जी कोणतीही टेस्ट नेटवर्क प्रोवाइडरयाच्या कारणातील सामग्री सामने आहे तो टेस्ट ISERDD स्टाफच्या फॉममध्ये)**

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<table>
<thead>
<tr>
<th>ISERDD</th>
<th>SP1-NARRATIVE</th>
<th>QuTub Project - Mumbai</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9.</strong></td>
<td>SP must collect prescription and/or any medicines given by the provider.</td>
<td><strong>SP</strong> को प्रोवाइडर द्वारा दी गई दवाई या दवाई का पत्र अपने लिए रखना है।</td>
</tr>
<tr>
<td><strong>10.</strong></td>
<td>SP must remember if the provider gave any diagnosis.</td>
<td><strong>SP</strong> को प्रोवाइडर द्वारा दिये गये डायग्नोसिस को याद रखना है।</td>
</tr>
<tr>
<td><strong>11.</strong></td>
<td>SP must remember if the provider recorded the information he took from you.</td>
<td><strong>SP</strong> को यह ध्यान रखना है कि प्रोवाइडर ने आपसे जो जानकारी ली उसको सही लिखकर रखा।</td>
</tr>
</tbody>
</table>
| **12.** | SP should remember if the provider referred to:  
- a private provider/ private hospital  
- BMC / Municipal hospital  
- DOTS centre  
- Other location and include the name of the provider or health facility you were referred to: | **SP** को अंदाज में यदि प्रोवाइडर रेफर करता है तो:  
- एक वैसा प्रोवाइडर/प्राइवेट हॉस्�پिटल  
- एम्सी / सिटी हॉस्पिटल  
- डाउट्स सेंटर  
- अन्य स्थान के वीएच / मेन्सिटी स्पिटल आपसे रेफर कर दिया है। |
<p>| <strong>13.</strong> | Prescriptions and pills given must be preserved for analysis. | <strong>SP</strong> को पत्र और दवाई एनालिसिस के लिए संरक्षित कर रखना है। |
| <strong>14.</strong> | SP should refuse any injections/ invasive tests performed by the provider during this encounter but note down details of what was offered/suggested. | <strong>SP</strong> को इस बात की जानकारी के दोनों किसी भी तरह की इंजेक्शन / इन्सेविय टेस्ट लेने से इनकार करना है लेकिन ऐसे किसी भी सुझाव को नोट करने की आवश्यकता हो। |
| <strong>15.</strong> | If the provider asks any question that is not in the list then the SP should say no or deflect by either saying I don’t know or I don’t remember as is appropriate to the context. | **को इस बात की जानकारी के दोनों किसी भी तरह की इंजेक्शन / इन्सेविय टेस्ट लेने से इनकार करना है लेकिन ऐसे किसी भी सुझाव को नोट करने की आवश्यकता हो। |
| <strong>16.</strong> | SP should get the prices of the prescribed medicines, labs or consultation fees from the provider. | <strong>SP</strong> को प्रोवाइडर द्वारा दी पत्र पर लिखी दवाई, लेखन या कॉनसल्टेंसी फीस की जानकारी को याद रखना है। |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Requirement/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td><strong>Supervisor /SP</strong> should get the prices, brand and generic names of the prescribed medicines. Supervisor/SP को प्रोविडर द्वारा लिखी दवाईं का मूल्य, ब्रांड तथा जेनरिक नाम का पता करना है। Supervisor/ SP ला प्रोवाइडरद्वारा दिले गेलेल्या औषधांचे मूल्य, ब्रांड आणि जेनरिक नावांची माहिती गोऱा करायची आहे</td>
</tr>
<tr>
<td></td>
<td>- Fill all unlabelled FIRST खुली दवाईंच्या लिखें खुली औषधें पहले लिहा</td>
</tr>
<tr>
<td></td>
<td>- In brand: write Unlabelled ब्रांड मध्ये अनलेब्ल्ड लिहा ब्रांड मध्ये अनलेब्ल्ड लिहा</td>
</tr>
<tr>
<td></td>
<td>- In generic: describe the color + shape जेनरिक मध्ये दवाईं का आकार व रंग लिहा जेनरिक मध्ये रंग आणि आकार लिहा</td>
</tr>
</tbody>
</table>
**Standardized Case 4: A case of suspected MDR-TB (previous history of TB treatment)**

*Suraj* (Male)

Suraj is a 38 year old male who has studied up to 10th standard while he was living with his uncle (Chacha) in the city. He works in a General Store and earns rupees 14000 to 15000 in a month. He lives in the city in a rented two room house with his wife and three children, aged 13 (boy), 10 (girl) and 6(boy) and all of them are studying in a BMC / Municipal school. His parents are back in the village where his father has a small piece of land.

Suraj had developed a cough last year for which he went to a BMC / Municipal hospital near his house where after a sputum test and chest x-ray he was diagnosed with TB. He was given 6 or 7 different types of tablets and had to take them on alternate days. (ek din chod kar). He took the treatment for 4 to 5 months and then stopped it as he felt better. But after stopping the medication he had mild cough which used to subside on its own. His family has been keeping well and none of them have ever had any of his symptoms.

But since last one month he is suffering from cough which is more or less present during early morning and night, and he also has expectoration in which he has seen flecks of blood once or twice in a month. He also has low grade mild fever, on and off, which gets worse during the evening time. But since this problem started he feels a bit tired and also has lost some weight, as his clothes have gotten a bit loose. He does not suffer from any associated chest or body pain. He has tried some home remedies and cough syrup from a local chemist for the problem. However, the cough had not subsided. He has misplaced other medical records.

He smokes 4-5 *beedis* during the day since last 10-12 years and drinks alcohol once or twice the month.

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**BMJ Global Health**

चारी और बदन दर्द नहीं है। सूरज ने पिचले महीने केंद्र से खाँसी का सिरप और कुछ घरेलू उपचार किये जिससे उसकी खाँसी में कुछ आया। लेकिन उसने रात रहा है कि अप्सराओं ने उसे इतने से उठाए चक्कर लगाये, इसलिए उसने ब्राइटेन डाकर से सलाह लेने के बारे में दोिया। उसके पास धूप की जों ने रिपोर्ट है लेकिन बाकी मेडिकल रिकॉर्ड उससे कही खो गये हैं।

सूरज दिन में 4 से 5 बिंदी पीता है और उसकी यह आदत पिचले 10-12 सालों से है। महीने में एक या दो बार शराब का सेवन भी कर लेता है।

सूरज (पुरुष)

सूरज एक 38 वर्षीय व्यक्ति आहे। त्यांनी आपल्या काळांकडे राहून 10वी पर्यंत शिक्षण पूर्ण केलं। सूरज ह्यांच्या आई-जिडिमक्कडे गावाच्या शेतीसाठी एक छोटीसोची जमीन आहे। सूरज आपल्या पत्नी आणि तीन मुलांसोबत, त्यांच्या वयस्क मुले 13 (मुलगी), 10 (मुलगी) आणि 6 (मुलगी) आहेत, भाड्याच्या दोन खोल्यांच्या घरात राहतात। सूरज एका किरणाच्या दुकान (पिंटला फिश) मध्ये काम करत आहे तर त्याच्या प्रति महिना 14000 एवढे 15000 रु.पर गेलरीत होते। सूरज ह्यांच्या पत्नी आणि मुलांचे आरोग्य चांगले आहे आणि त्यांच्या कोणारा आल्यावरील आजार नाही आहे।

पण मागील एका मेडिनिययापासून सूरज ह्यांच्या पत्त खोल्यांची आणि तापाच्या बाजा होऊन लागल्या आहे। खोकल्याच्या बाजार (बिडक) पण येथील ज्यामांतून मागील मेडिनिय एक-दोन वेळा लात रंगावे धधे पण दिसले होते। खोकल्याच्या बाजार त्यांना हलकासा ताप घडतो-उडतो, पण अनेकदा संदीपकाच्या वेळी ताप आतो होतो। जेव्हा सुरु ह्यांच्या बाजारात हलकासा ताप घडतो, पण त्यांना असा वातावरण कि त्यांच्या बाजारात ठोळ ठोळ घडतो होतो। जेव्हा त्यांना असा वातावरण कि त्यांच्या बाजारात ठोळ ठोळ घडतो होतो, त्यांना ह्यांच्या बाजारात ठोळ ठोळ घडतो होतो। जेव्हा ह्यांच्या बाजारात हलकासा ताप घडतो, पण त्यांना असा वातावरण कि त्यांच्या बाजारात ठोळ ठोळ घडतो होतो।

सूरज दिसांतून 4 ते 5 बिंदी पिटात आणि त्यांची घर त्यांच्या हातांतून 10-12 वर्षपासूनची आहे। ते मेडिनिययापासून एकदा किंवा दोनदा मद्यप्रसारण पण करतात।
Sapna (Female)

Sapna is a 38 year old female, a home maker, who has studied upto 10th standard. Her husband works in a General Store and earns rupees 15000 in a month. She lives in a rented two room house with her husband and three children aged 13 (boy), 10 (girl) and 6 (boy). Her two elder children are studying in a BMC / Municipal school and the youngest is attending a small play school nearby. She is able to manage the household expenses with her husband’s income.

Sapna had developed a cough last year for which she went to a BMC / Municipal hospital near her house where after a sputum test and chest x-ray she was diagnosed with TB. She was given 6 or 7 different types of tablets and had to take them on alternate days. (ek din chod kar). She took the treatment for 4 to 5 months and then stopped it as she felt better. But after stopping the medication she had mild cough which used to subside on its own. Her family has been keeping well and none of them have ever had any of his symptoms.

But since last one month she is suffering from cough which is more or less present during early morning and night, and she also has expectoration in which she has seen flecks of blood once or twice in a month. She does not suffer from any associated chest or body pain. She has tried some home remedies and cough syrup from a local chemist for the problem. However, the cough had not subsided. She has tried some home remedies and cough syrup from a local chemist for the problem. She has misplaced other medical records.
Opening statement: “Doctor, I am suffering from a bad cough – One year ago I had got treatment in the BMC / Municipal hospital, and it had got better. But now again having cough again. I went back to the same hospital and they did sputum test.” Can you see me.

[Note:- If asked, SP to present with the sputum smear report that is positive for acid fast bacillus].”
History questions asked by the provider and their answers

Q 1: What is the duration of cough?

प्रश्न 1: खोकरा कधी झारून आशे?

Ans 1: One Month.

उत्तर 1: एका महिन्यापासून

Q 2: When you had cough earlier you went to a BMC / Municipal hospital?

प्रश्न 2: जेव्हा भागीर लेऱ्या आऩल्मारा खोकरा झारा तेव्हा आऩण फी एभ वी / म्मुननसवऩर रुग्णारमात गेळो ते होतात का?

Ans 2: Yes, I did go there.

उत्तर 2: हो, मी गेळो होतो

Q 3: Did you get any tests for the previous episode?

प्रश्न 3: पिचली बाल गेळ्या आऩल्मारा कोई टेस्ट करवाव्या थे?

Ans 3: Yes, sputum test and a chest x-ray

उत्तर 3: हो, थुंकी ची स्टिट्टी आणि चेस्ट एक्स-रे करवावा था ।

Q 4: Did they tell you what you had for the previous episode?

प्रश्न 4: पिचली बाल उन्होंने बतावा था कि आपले कसे होतात?

Ans 4: Yes, they told me I had TB

उत्तर 4: हो, उन्होंने बतावा था कि मुझे टी झाले आहे।
Q. 5: What treatment did you get?
Prash: 5. Aapko kya ilaj mila tha?
Ans 5: I was given 6 or 7 types of tablets.
Uttr: 5. Mujhe 6-7 tareekh ki gothiyon milthi thi.
Uttr5.: 6-7 prakaracha oorshbang-goycha dilaya hote

Q6: Do you know what these were?
Prash: 6: Kya Aapko pata hain kya aapko kya gothiyon kya?
Prash: 6: Aaplyaala mahiti aapka ka to Aaplyaala ko lekgi oorshbang-goycha dilhyo hote?
Ans 6: No, I don't.
Uttr: 6: Nahin, madhya nahi mahiti

Q7: What was the dosage?
Prash: 7: Dava ka khurak kya the?
Prash: 7: Kumar chhava ka kya the?
Prash: 7: Oorshbang chhava (Dosage) kay hote?
Ans 7: I had to take them every alternate day.
Uttr: 7: Main har dusra din dava khata tha.
Uttr: 7: Madhya ek ek dosan sahro (ek ek dosan aad) oorshbang-goycha eyamche hote

Q 8: For how many months did you take the medicine?
Prash: 8: Aapne kitne maahen dava khai?
Prash: 8: Aapne koi koi koi dosan khai?
Prash: 8: Aapne kitne oorshbang pheteli?
Ans 8: 4 to 5 months.
Uttr: 8: 4-5 maahen.
Uttr: 8: 4-5 mahine

Q 9: Did they tell you to stop?
Prash: 9: Kya unhonnay dava band kare se liye kaha tha?
Prash: 9: Aaplaala vyanaa oorshbang vyanaa band konaya saangti kaa?
Ans 9: No, but I was feeling much better - so I thought I did not need the medicines any more - they create garmi.
Uttr: 9: Nahin, mujhe accha mahsuss hote lagha tha isakile main sochta ki oor davaayon ki janaath nahi hai, to garmi karegi.
Uttr: 9: Nahin, man madhya band vhandalaya laagn madhmyune bhavta kela ki jantriti oorshbangti jaran nahi - te garmi vaadvatilat

Q 10: Do you have the sputum report or the x-ray from the previous episode?
Prash: 10: Kya Aapke paane phooli jhar kundal kochh and ekse-re ki ripta hai?
Prash: 10: Aaplyakaane magchay vadhayee shonki tathmansi aani ekse-re ripta ahe ka?
Ans 10: No, I misplaced all the documents from the hospital.
Uttr: 10: Nahin, Aapnaal ka saare kaajgan mujhe nahi khaa gaRe hain.
Q 11: So your cough got better and now it is back?
प्रश्न 11: आपल्या धाक्केच्या ठिकाणी फक्त होणाऱ्यांना आपण आता परत होणार का?
Ans 11: Yes.
उत्तर 11: हों।

Q 12: Are you producing sputum (bulgam)?
प्रश्न 2: क्या आपको बुलगम बनाता है?
Ans 2: Yes
उत्तर 2: है।

Q 13: Does the sputum contain blood?
प्रश्न 13: क्या आपके बुलगम में खून आता है?
Ans 13: Yes, saw small flecks of blood once or twice in the last month.
उत्तर 13: हैं, मिले गहीन एक-दो बार खून के हल्के-हल्के घब्बे आये थे।

Q 14: Do you get fever?
प्रश्न 14: क्या आपको बुखार है?
Ans 14: Yes.
उत्तर 14: है।

Q 15: How long have you had fever?
प्रश्न 15: आपका बुखार कब से है?
Ans 15: One Month.
उत्तर 15: एक महीने से।

Q 16: What type of fever do you have?
Q 16: Do you get any chest pain?
प्रश्न 16: क्या आपकी छाती में दर्द होता है?
Ans 16: No
उत्तर 16: नहीं।

Q 17: Any loss of appetite?
प्रश्न 17: भूख कम क्षाली आहे का?
Ans 17: Yes, loss of appetite.
उत्तर 17: हो, भूख कम लगते.

Q 18: Have you lost weight?
प्रश्न 18: आप्रवासी वजन कम हुआ है?
Ans 18: I think so; my clothes have become a bit loose.
उत्तर 18: हो, मुझे लगता है क्योंकि मेरे कपड़े झीलो हो गये हैं।

Q 19: Do you smoke?
प्रश्न 19: क्या आप बीडी/सिगरेट पीते हैं?
Ans 20: Yes, I smoke beedis. [in case of male SP]
उत्तर 20: है, मैं बीडी पीता हूँ। (मैं SP के लिये)
No [in case of females SP] नहीं। (फीमेल SP के लिये)
Q 21: How many beedis in a day?

Ans 21: 4-5 beedis, I guess

Q 22: Since when have you been smoking beedis?

Ans 22: Since the last 10 or 12 years.

Q 23: Do you drink alcohol?

Ans 23: Yes [in case of male] No [in case of female SP]

Q 24: Does anyone in your family have TB?

Ans 24: No.

Q 25: Have you taken any medicines for your illness in last one month?

Ans 25: Took home remedies and took cough syrup from a chemist.

Q 26: Do you have diabetes?
Q 26: Do you have diabetes?
प्रश्न 26: क्या आपको सूगर ऐड्स?
Ans 26: I do not know
उत्तर 26: माहित नाही

Q 27: Do you have hypertension?
प्रश्न 27: क्या आपको हाइपरप्रेशन है?
Ans 27: I do not know
उत्तर 27: माहित नाही

Q 28: Do you have HIV-AIDS?
प्रश्न 28: क्या आपको HIV-AIDS है?
Ans 28: I do not know
उत्तर 28: माहित नाही

Q 29: Have you ever been tested for HIV-AIDS, Diabetes and High BP/Hypertension?
प्रश्न 29: कभी एचआईएस, शूगर और हाइपरप्रेशन की जांच या टेस्ट करवाया है?
Ans 29: Not been tested.
उत्तर 29: कभी टेस्ट नहीं करवाया।
उत्तर 29: कभी टेस्ट केल्मा नाही
**Important instructions to be remembered by SP**

**महत्वपूर्ण बातें जो एस पी को याद रखनी है**

**एस पी साठी महत्वाच्या सूचना**

1. **ISERDD staff will identify the facility and/or the provider for the SP, where the SP will present his case alone.**
   - ISERDD स्टाफ फील्ड में SP को प्रोवाइडर का क्लियिकल बताएगा जहां SP को अपने अपने केस करना है।
   - ISERDD स्टाफ फील्ड में SP ला प्रोवाइडर चे क्लियिकल सांगतील जिकडे SP ला एकत्र आपली केस सादर करायची आहे।

2. **SP should remember if the facility and/or the provider was the correct one. (for example, it was the correct location, but the name board did not match the name given or if the assigned provider was not there and the SP saw another provider)**
   - SP को याद रखना है कि यो सही प्रोवाइडर के क्लियिकल गये थे? (उदाहरण के लिए, जगह सही थी लेकिन बोर्ड पर विशेष नाम दिये गये नाम से मैच नहीं कर रहा था।
   - SP की लक्षात ठेवली आहे कि ते योग्य ते प्रोवाइडरच्या क्लियिकल मध्ये गेले होते का? (उदाहरणार्थ ज्या बरोबर होती निपट बोर्डवरचे नाव दिलेल्या नावाची मैच होत नही टकते)

3. **SP must remember if the provider carried out any of the following examination?**
   - SP को याद रखना है कि प्रोवाइडर ने निम्नलिखित में से कोई परीक्षण किये?
   - SP की लक्षात ठेवली आहे कि प्रोवाइडरनी खालीपैकी क्षणत्वय तपासण्याचा केल्या?
   - **Pulse rate**
   - **Respiratory rate**
   - **Auscultation of Chest (Did the provider comment on the auscultation)**
   - **Blood Pressure**
   - **Temperature**
   - **Throat examination**
   - **Weight**
4. Did the provider recommend any investigations? क्या प्रोवाइडर ने निर्देशित जीवी कराने को कहा?

(If yes, SP should ask provider to write the name of the test and the laboratory. And hand over the
document to an ISERDD staff.) Write the specific name of lab given by the provider and if no put (-99).

(जर हो तर, SP नी प्रोवाइडरनी लिखला अणि लेखे नाव लिहून ध्यानयाचे आहे आणि त्या कामदाला
ISERDD स्टाफ दाखल येईल) जर प्रोवाइडरनी विशेष लेखे ने नाव सुचवले तर ते लिहून ध्या, जर नाही
सांगितले तर (-99) भरा

- Chest X-Ray छाती एक्स-रे
- CT Scan सी टी स्कॅन
- Blood- Total count, differential count- ESR रक्त-टोटल काउंट, विभिन्न प्रकार काउंट-ई एस एआर
- Blood- HIV test रक्त-एवी टेस्ट
- Blood- Diabetes test रक्त-धीर्द टेस्ट
- Blood- TB Gold रक्त- टी बी गोल्ड
- Blood- TB ELISA रक्त- टी बी ऐलाइजा
- Sputum smear examination (Sputum AFB) स्पूटम प्रभेड्र्वाचन
- Sputum GeneXpert test स्पूटम जीनएक्सपर्ट टेस्ट
- Sputum culture स्पूटम कल्चय
- Mantoux Test मान्तूक्स टेस्ट
- TB- PCR (not specific) टी बी - पी सी एस (विशेषता नाही हे)
- Drug susceptibility test (culture, gene Xpert, line probe assay) ड्रग स्वेक्ट्बफसारटी टेस्ट (कल्चय, जीनएक्सपर्ट, लाईन प्रोफ एस्वे)

5. Did the provider give you any vouchers or referral coupons? क्या प्रोवाइडर ने SP को कोई वाऊचर या रेफरल कूपन दिया?

(If yes, SP should retain the voucher or referral coupons and hand over to any ISERDD staff. On the form,
supervisors will write the voucher number and name from the stamp.)

(जर हो, तर SP नी वाऊचर/रेफरल कूपन सामान्य ठेवाव्याचे आहे आणि ISERDD स्टाफ च्या हाताला
दाखल आहे)

- Treatment उपचार
- Chest X-Ray छाती एक्स-रे
- GeneXpert जीनएक्सपर्ट टेस्ट
6. **SP must remember if personal details (Name, Mobile, Address) were given to the provider. If so, what was the full name the SP gave?** (Some providers who work with the PPIA will collect this information if they identify the SP as a presumptive TB case, refer you to a lab for sputum or CXR, or refer you to certain providers.)

SP को याद रखना है कि उसने प्रोवाइडर को वह निजी जानकारी दी। जैसे नाम, मोबाइल नंबर, पता। यदि दी, तो एस पी ने अपना पूरा नाम क्या बताया? (PPIA के साथ काम करने वाले कुछ प्रोवाइडर्स जानकारी को इकट्ठा करेंगे यदि वह पहचान ले कि आपएक संभावित TB केस हो तो वह आपको छात्र एक्स-रे या भूल जीच के लिए लेब में रेफर या चुने हुए प्रोवाइडर के पास रेफर करेंगे)

7. **SP must remember if someone at the facility completed a registration form to register the SP’s personal details such as with a call center. (Some providers who work with the PPIA will make a call to register patients.)**

SP को याद रखना है कि प्रोवाइडर ने SP की व्यवस्थित जानकारी रजिस्ट्रेट करने के लिए फोन एक कॉल सेंटर को फोन किया।

(PPIA के साथ काम करने वाले कुछ प्रोवाइडर्स पेटेंट को रजिस्ट्रेट करने के लिए फोन करेंगे)

8. **ISERDD staff to mark which of the following tests was recommended by a networked provider.** (Refer to networked provider/lab list)

ISERDD का याद रखना है कि टेस्ट नेटवर्क प्रोवाइडर द्वारा करवाने के लिए बोला गया है उसे ISERDD स्टॉफ को फार्म में मार्क करना है।

9. **SP must remember if the provider gave any diagnosis.**

SP को याद रखना है कि प्रोवाइडर ने SP को डायग्नॉस्टिक दिया।

10. **SP must remember if the provider recorded the information he took from you.**

SP को याद रखना है कि प्रोवाइडर ने आपने जो जानकारी जो उसको कही लिखकर रखा।

11. **SP should remember if the provider referred to:**

SP को याद रखना है यदि प्रोवाइडर रेफर करता है तो:

- a private provider/ private hospital प्राइवेट प्रोवाइडर/प्राइवेट अस्पताल प्राइवेट प्रोवाइडर / प्राइवेट रुग्णालय
- a BMC / Municipal hospital सरकारी अस्पताल बी एम सी / मुनिसिपल रुग्णालय
- DOTS centre डीटीएस सेंटर डायटस सेंटर
- Other location अन्य स्थान अन्य जगाए
and include the name of the provider or health facility you were referred to:

अणण क्जकडे येपय केरां त्मा प्रोलामडय ककांला पैसवरीचे नाल वाभीर कया

12. **SP should refuse any injections/ invasive tests performed by the provider during this encounter but note down details of what was offered/suggested.**

SPको इंस वातावरण के दीर्घकाळ किसी भी तरह का इंजेक्शन/ इन्वेसिव टेस्ट लेने से इनकार करना है लेकिन ऐसे किसी भी सुझाव को नोट करके बताना है।

13. **If the provider asks any question that is not in the list then the SP should say no or deflect by either saying I don't know or I don't remember as is appropriate to the context.**

यदि देशायाच्या कोई ऐसा सवाल पूछता है जो लिस्ट में शामिल नहीं है तो SP को कहना है मुझे पता नहीं या याद नहीं आ रहा (जो उस समय चिंतित लगे)

14. **SP must collect prescription and/or any medicines given by the provider.**

SP को प्रोपाडय द्वारा घूमी दवाई या दवाई का पावण आयप लेना है।

15. **SP should get the prices of the prescribed medicines, labs or consultation fees from the provider.**

SP को प्रोपाडय द्वारा घूमी दवाई या कागदाला चेलत नाशी करताना जो लिस्ट मध्ये सामिल नाही आहेत तर SPनी संगायचे आहेत किंतु माहित नाही किंवा आठलत नाही (जे त्या वेळी उत्तम वाताने ते)

16. **Supervisor /SP should get the prices, brand and generic names of the prescribed medicines.**

Supervisor/SP को प्रोपाडय द्वारा गेलेल्या औषधवाचे मूल्य, ब्रांड व जेनरिक नाम का पावण करता है।

- Fill all unlabelled FIRST सूली दवाईंच्या पहले लिंक खुली औषध यांच्या सरवरून आव्हान
- In brand: write Unlabelled ब्रांड मध्ये अनलेबल लिंक खुली ब्रांड मध्ये अनलेबल सरवरून
- In generic: describe the color + shape जेनरिक मध्ये दवाई का आकार व रंग लिंक जेनरिक मध्ये रंग आणि आकार लिंक

17. **Prescriptions and pills given must be preserved for analysis.**

SP को पर्यायी औषधप्रदाता दिले गेलेल्या औषधांचे मूल्य, ब्रांड आणि जेनरिक नावाची माहिती गोळ्मा करायची आहेस.
### Table A1. History question completion

<table>
<thead>
<tr>
<th>Exams</th>
<th>Public Dispensary</th>
<th>Public Hospital</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse</td>
<td>13.6%</td>
<td>13.2%</td>
<td>59.1%</td>
</tr>
<tr>
<td>Auscultation</td>
<td>28.7%</td>
<td>42.7%</td>
<td>92.7%</td>
</tr>
<tr>
<td>Provider commented on auscultation</td>
<td>50.0%</td>
<td>66.7%</td>
<td>66.2%</td>
</tr>
<tr>
<td>Temperature</td>
<td>0.0%</td>
<td>1.3%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Thorax Exam</td>
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<td>2.6%</td>
<td>40.9%</td>
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<tr>
<td>Blood Pressure</td>
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<td>65.5%</td>
</tr>
<tr>
<td>Weight</td>
<td>4.5%</td>
<td>0.0%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Abdomen palpitation</td>
<td>1.1%</td>
<td>0.0%</td>
<td>33.5%</td>
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<table>
<thead>
<tr>
<th>Case 1 Questions</th>
<th>Public Dispensary</th>
<th>Public Hospital</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of Cough</td>
<td>95.5%</td>
<td>92.1%</td>
<td>99.0%</td>
</tr>
<tr>
<td>Sputum</td>
<td>54.5%</td>
<td>57.9%</td>
<td>86.5%</td>
</tr>
<tr>
<td>Past TB</td>
<td>29.5%</td>
<td>60.5%</td>
<td>43.4%</td>
</tr>
<tr>
<td>Family TB</td>
<td>15.9%</td>
<td>34.2%</td>
<td>24.7%</td>
</tr>
<tr>
<td>Blood in Sputum</td>
<td>15.9%</td>
<td>10.5%</td>
<td>27.9%</td>
</tr>
<tr>
<td>Cough Throughout Day</td>
<td>20.5%</td>
<td>15.8%</td>
<td>61.7%</td>
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<tr>
<td>Fever</td>
<td>79.5%</td>
<td>78.9%</td>
<td>94.6%</td>
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<td>Fever Type</td>
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<td>34.2%</td>
<td>73.7%</td>
</tr>
<tr>
<td>Family or Family with Similar Symptoms</td>
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<td>10.5%</td>
<td>13.2%</td>
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<tr>
<td>Chest Pain</td>
<td>11.4%</td>
<td>18.4%</td>
<td>37.4%</td>
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<tr>
<td>Loss of Appetite</td>
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<td>23.7%</td>
<td>55.0%</td>
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<tr>
<td>Lost Weight</td>
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<td>21.1%</td>
<td>51.7%</td>
</tr>
<tr>
<td>Wheezing</td>
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</tr>
<tr>
<td>Difficulty Breathing</td>
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<td>26.3%</td>
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<tr>
<td>Smoking</td>
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<td>Alcohol History</td>
<td>9.1%</td>
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<td>16.3%</td>
</tr>
<tr>
<td>Taken Medicines for Illness</td>
<td>38.6%</td>
<td>26.3%</td>
<td>71.2%</td>
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<tr>
<td>Diabetes</td>
<td>2.3%</td>
<td>15.8%</td>
<td>20.9%</td>
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<tr>
<td>HIV/AIDS</td>
<td>0.0%</td>
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<tr>
<td>Age</td>
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<td>83.2%</td>
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<tr>
<td>Duration of Cough</td>
<td>93.2%</td>
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<td>96.8%</td>
</tr>
<tr>
<td>Sputum</td>
<td>38.6%</td>
<td>65.8%</td>
<td>86.8%</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Case 2 Questions</th>
<th>Public Dispensary</th>
<th>Public Hospital</th>
<th>Private Sector</th>
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</thead>
<tbody>
<tr>
<td>Medication Taken Last Month for Present Illness</td>
<td>18.2%</td>
<td>15.8%</td>
<td>33.2%</td>
</tr>
<tr>
<td>Visited Governmental Hospital for Previous Illness</td>
<td>52.3%</td>
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<tr>
<td>Treatment for Previous Illness</td>
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<td>57.9%</td>
<td>31.6%</td>
</tr>
<tr>
<td>Sputum or X-Rays Done for Previous Illness</td>
<td>15.9%</td>
<td>23.7%</td>
<td>33.6%</td>
</tr>
<tr>
<td>Diagnosis Given by Governmental Hospital</td>
<td>40.9%</td>
<td>55.3%</td>
<td>43.2%</td>
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<tr>
<td>Past TB Treatment</td>
<td>61.4%</td>
<td>57.9%</td>
<td>50.4%</td>
</tr>
<tr>
<td>For How Long Past TB Treatment</td>
<td>81.8%</td>
<td>86.8%</td>
<td>52.8%</td>
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<td>Reason for Stopping</td>
<td>75.0%</td>
<td>71.1%</td>
<td>45.2%</td>
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<td>Previous Treatment Medical Records</td>
<td>31.8%</td>
<td>36.8%</td>
<td>34.8%</td>
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<td>Blood in Sputum</td>
<td>2.3%</td>
<td>13.2%</td>
<td>16.9%</td>
</tr>
<tr>
<td>Cough Throughout Day</td>
<td>4.5%</td>
<td>21.1%</td>
<td>46.6%</td>
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<tr>
<td>Fever</td>
<td>43.2%</td>
<td>76.3%</td>
<td>87.6%</td>
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<tr>
<td>Fever Type</td>
<td>25.0%</td>
<td>39.5%</td>
<td>55.0%</td>
</tr>
<tr>
<td>Similar Symptoms Before</td>
<td>6.8%</td>
<td>2.6%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Family TB</td>
<td>2.3%</td>
<td>10.5%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Chest Pain</td>
<td>6.8%</td>
<td>13.2%</td>
<td>21.7%</td>
</tr>
<tr>
<td>Loss of Appetite</td>
<td>15.9%</td>
<td>18.4%</td>
<td>55.4%</td>
</tr>
<tr>
<td>Lost Weight</td>
<td>11.4%</td>
<td>18.4%</td>
<td>44.2%</td>
</tr>
<tr>
<td>Wheezing</td>
<td>0.0%</td>
<td>0.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Difficulty in Breathing</td>
<td>2.3%</td>
<td>5.3%</td>
<td>28.5%</td>
</tr>
<tr>
<td>Smoking</td>
<td>11.4%</td>
<td>13.2%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Alcohol</td>
<td>9.1%</td>
<td>7.9%</td>
<td>18.1%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4.5%</td>
<td>5.3%</td>
<td>29.7%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>2.3%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>High Blood Pressure or Hypertension</td>
<td>2.3%</td>
<td>2.6%</td>
<td>22.9%</td>
</tr>
<tr>
<td>Presence of Children</td>
<td>4.5%</td>
<td>5.3%</td>
<td>14.1%</td>
</tr>
<tr>
<td>Age</td>
<td>81.8%</td>
<td>73.7%</td>
<td>79.9%</td>
</tr>
</tbody>
</table>
Table A2. Regression comparison of public vs private sector

<table>
<thead>
<tr>
<th>Comparison vs Private Sector</th>
<th>Difference</th>
<th>Standard Error</th>
<th>T-Statistic</th>
<th>P-Value</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STCI Management: Public Dispensaries</td>
<td>-0.188</td>
<td>0.066</td>
<td>-2.864</td>
<td>0.004</td>
<td>-0.317</td>
<td>-0.059</td>
</tr>
<tr>
<td>STCI Management: Public Hospitals</td>
<td>-0.018</td>
<td>0.064</td>
<td>-0.283</td>
<td>0.777</td>
<td>-0.145</td>
<td>0.108</td>
</tr>
<tr>
<td>MCGM Protocol: Public Dispensaries</td>
<td>0.371</td>
<td>0.060</td>
<td>6.180</td>
<td>0.000</td>
<td>0.253</td>
<td>0.489</td>
</tr>
<tr>
<td>MCGM Protocol: Public Hospitals</td>
<td>0.336</td>
<td>0.071</td>
<td>4.768</td>
<td>0.000</td>
<td>0.198</td>
<td>0.475</td>
</tr>
<tr>
<td>Share of Questions: Public Dispensaries</td>
<td>-0.183</td>
<td>0.023</td>
<td>-8.002</td>
<td>0.000</td>
<td>-0.228</td>
<td>-0.138</td>
</tr>
<tr>
<td>Share of Questions: Public Hospitals</td>
<td>-0.152</td>
<td>0.028</td>
<td>-5.507</td>
<td>0.000</td>
<td>-0.206</td>
<td>-0.098</td>
</tr>
<tr>
<td>Chest X-Ray: Public Dispensaries</td>
<td>-0.227</td>
<td>0.065</td>
<td>-3.953</td>
<td>0.000</td>
<td>-0.385</td>
<td>-0.129</td>
</tr>
<tr>
<td>Chest X-Ray: Public Hospitals</td>
<td>-0.158</td>
<td>0.066</td>
<td>-2.388</td>
<td>0.017</td>
<td>-0.288</td>
<td>-0.028</td>
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<tr>
<td>Sputum AFB: Public Dispensaries</td>
<td>0.437</td>
<td>0.066</td>
<td>6.630</td>
<td>0.000</td>
<td>0.307</td>
<td>0.566</td>
</tr>
<tr>
<td>Sputum AFB: Public Hospitals</td>
<td>0.361</td>
<td>0.074</td>
<td>4.852</td>
<td>0.000</td>
<td>0.214</td>
<td>0.507</td>
</tr>
<tr>
<td>Xpert MTB/RIF: Public Dispensaries</td>
<td>-0.119</td>
<td>0.042</td>
<td>-2.470</td>
<td>0.014</td>
<td>-0.214</td>
<td>-0.024</td>
</tr>
<tr>
<td>Xpert MTB/RIF: Public Hospitals</td>
<td>0.132</td>
<td>0.061</td>
<td>2.175</td>
<td>0.031</td>
<td>0.071</td>
<td>0.234</td>
</tr>
<tr>
<td><strong>Family 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Started TB Treatment: Public Dispensaries</td>
<td>0.006</td>
<td>0.018</td>
<td>0.335</td>
<td>0.738</td>
<td>-0.029</td>
<td>0.041</td>
</tr>
<tr>
<td>Started TB Treatment: Public Hospitals</td>
<td>-0.016</td>
<td>0.009</td>
<td>-1.739</td>
<td>0.083</td>
<td>-0.035</td>
<td>0.002</td>
</tr>
<tr>
<td>Fluoroquinolones: Public Dispensaries</td>
<td>0.005</td>
<td>0.031</td>
<td>0.145</td>
<td>0.885</td>
<td>-0.057</td>
<td>0.066</td>
</tr>
<tr>
<td>Fluoroquinolones: Public Hospitals</td>
<td>0.028</td>
<td>0.021</td>
<td>1.321</td>
<td>0.187</td>
<td>-0.069</td>
<td>0.014</td>
</tr>
<tr>
<td>Other Antibiotic: Public Dispensaries</td>
<td>0.155</td>
<td>0.064</td>
<td>2.422</td>
<td>0.016</td>
<td>0.029</td>
<td>0.281</td>
</tr>
<tr>
<td>Other Antibiotic: Public Hospitals</td>
<td>0.242</td>
<td>0.060</td>
<td>3.848</td>
<td>0.001</td>
<td>0.105</td>
<td>0.378</td>
</tr>
<tr>
<td>Steroids: Public Dispensaries</td>
<td>-0.023</td>
<td>0.008</td>
<td>-2.788</td>
<td>0.006</td>
<td>-0.039</td>
<td>-0.007</td>
</tr>
<tr>
<td>Steroids: Public Hospitals</td>
<td>-0.022</td>
<td>0.008</td>
<td>-2.837</td>
<td>0.005</td>
<td>-0.037</td>
<td>-0.007</td>
</tr>
<tr>
<td><strong>Family 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP Subjective Rating (1-10): Public Dispensaries</td>
<td>0.186</td>
<td>0.203</td>
<td>0.914</td>
<td>0.361</td>
<td>-0.214</td>
<td>0.586</td>
</tr>
<tr>
<td>SP Subjective Rating (1-10): Public Hospitals</td>
<td>0.128</td>
<td>0.227</td>
<td>0.564</td>
<td>0.573</td>
<td>-0.319</td>
<td>0.575</td>
</tr>
<tr>
<td>Provider Used Cell Phone: Public Dispensaries</td>
<td>0.022</td>
<td>0.047</td>
<td>0.473</td>
<td>0.637</td>
<td>-0.071</td>
<td>0.111</td>
</tr>
<tr>
<td>Provider Used Cell Phone: Public Hospitals</td>
<td>-0.051</td>
<td>0.027</td>
<td>-1.686</td>
<td>0.063</td>
<td>-0.104</td>
<td>0.003</td>
</tr>
<tr>
<td>Other People Were In Room: Public Dispensaries</td>
<td>0.014</td>
<td>0.034</td>
<td>0.417</td>
<td>0.677</td>
<td>-0.053</td>
<td>0.081</td>
</tr>
<tr>
<td>Other People Were In Room: Public Hospitals</td>
<td>0.070</td>
<td>0.079</td>
<td>0.942</td>
<td>0.000</td>
<td>0.109</td>
<td>0.525</td>
</tr>
<tr>
<td>Provider Had A TV On: Public Dispensaries</td>
<td>-0.002</td>
<td>0.002</td>
<td>-0.947</td>
<td>0.349</td>
<td>-0.007</td>
<td>0.002</td>
</tr>
<tr>
<td>Provider Had A TV On: Public Hospitals</td>
<td>0.003</td>
<td>0.003</td>
<td>0.990</td>
<td>0.323</td>
<td>-0.008</td>
<td>0.003</td>
</tr>
<tr>
<td>SP Liked The Provider: Public Dispensaries</td>
<td>0.041</td>
<td>0.023</td>
<td>1.762</td>
<td>0.079</td>
<td>-0.005</td>
<td>0.088</td>
</tr>
<tr>
<td>SP Liked The Provider: Public Hospitals</td>
<td>0.011</td>
<td>0.027</td>
<td>0.409</td>
<td>0.683</td>
<td>-0.043</td>
<td>0.065</td>
</tr>
<tr>
<td>SP Would Go To This Provider: Public Dispensaries</td>
<td>0.052</td>
<td>0.024</td>
<td>2.193</td>
<td>0.029</td>
<td>0.005</td>
<td>0.099</td>
</tr>
<tr>
<td>SP Would Go To This Provider: Public Hospitals</td>
<td>0.022</td>
<td>0.027</td>
<td>0.810</td>
<td>0.418</td>
<td>-0.032</td>
<td>0.076</td>
</tr>
<tr>
<td>Provider Created A Private Environment: Public Dispensaries</td>
<td>0.049</td>
<td>0.045</td>
<td>1.090</td>
<td>0.276</td>
<td>-0.039</td>
<td>0.137</td>
</tr>
<tr>
<td>Provider Created A Private Environment: Public Hospitals</td>
<td>-0.493</td>
<td>0.063</td>
<td>-7.827</td>
<td>0.000</td>
<td>-0.617</td>
<td>-0.369</td>
</tr>
<tr>
<td>Provider Seemed Knowledgeable About Illness: Public Dispensaries</td>
<td>-0.043</td>
<td>0.057</td>
<td>-0.759</td>
<td>0.448</td>
<td>-0.069</td>
<td>0.156</td>
</tr>
<tr>
<td>Provider Seemed Knowledgeable About Illness: Public Hospitals</td>
<td>-0.017</td>
<td>0.056</td>
<td>-0.301</td>
<td>0.763</td>
<td>-0.126</td>
<td>0.092</td>
</tr>
<tr>
<td>Provider Addressed Worries Seriously: Public Dispensaries</td>
<td>-0.033</td>
<td>0.062</td>
<td>-0.531</td>
<td>0.596</td>
<td>-0.155</td>
<td>0.089</td>
</tr>
<tr>
<td>Provider Addressed Worries Seriously: Public Hospitals</td>
<td>-0.012</td>
<td>0.060</td>
<td>-0.201</td>
<td>0.841</td>
<td>-0.130</td>
<td>0.106</td>
</tr>
<tr>
<td>Provider Explained SP Condition: Public Dispensaries</td>
<td>-0.085</td>
<td>0.019</td>
<td>-4.408</td>
<td>0.000</td>
<td>-0.123</td>
<td>-0.047</td>
</tr>
<tr>
<td>Provider Explained SP Condition: Public Hospitals</td>
<td>-0.016</td>
<td>0.038</td>
<td>-0.426</td>
<td>0.670</td>
<td>-0.091</td>
<td>0.058</td>
</tr>
<tr>
<td>Provider Explained SP Treatment Plan: Public Dispensaries</td>
<td>0.047</td>
<td>0.062</td>
<td>0.678</td>
<td>0.498</td>
<td>-0.080</td>
<td>0.164</td>
</tr>
<tr>
<td>Provider Explained SP Treatment Plan: Public Hospitals</td>
<td>-0.122</td>
<td>0.051</td>
<td>-2.410</td>
<td>0.016</td>
<td>-0.222</td>
<td>-0.023</td>
</tr>
</tbody>
</table>

**Family 4**

| Time Waiting (min): Public Dispensaries | -17.709 | 5.457 | -3.245 | 0.001 | -28.442 | -6.977 |
| Time Waiting (min): Public Hospitals | 68.736 | 17.920 | 3.839 | 0.000 | 33.555 | 104.937 |
| Amount Paid (INR): Public Dispensaries | -505.314 | 25.129 | -20.109 | 0.000 | -554.731 | -455.897 |
| Amount Paid (INR): Public Hospitals | -504.523 | 24.904 | -20.259 | 0.000 | -553.497 | -455.549 |
| Time with Provider: Public Dispensaries | -2.671 | 0.271 | -9.842 | 0.000 | -3.204 | -2.137 |
| Time with Provider: Public Hospitals | -2.996 | 0.450 | -6.455 | 0.000 | -3.367 | -2.626 |

**Notes:** This figure reports the results of a series of regressions using both the public hospital interactions (N=76) and private hospital interactions (N=633). Each point reports the real-valued coefficient for the indicator variable of the private sector and the corresponding confidence interval. Estimates are controlled for individual SP ID and the case scenario; standard errors are clustered by facility. The measures are grouped into four families for illustrative purposes.
### Figure A1. Case management with private sector split by MD specialist qualifications

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>STCI Management</td>
<td>STCI Management</td>
</tr>
<tr>
<td>MCGM Protocol</td>
<td>MCGM Protocol</td>
</tr>
<tr>
<td>Chest X-Ray</td>
<td>Chest X-Ray</td>
</tr>
<tr>
<td>Sputum AFB</td>
<td>Sputum AFB</td>
</tr>
<tr>
<td>Xpert MTB/RIF</td>
<td>Xpert MTB/RIF</td>
</tr>
<tr>
<td>TB Suspicion</td>
<td>TB Suspicion</td>
</tr>
<tr>
<td>Referred Away</td>
<td>Referred Away</td>
</tr>
<tr>
<td>Steroids</td>
<td>Steroids</td>
</tr>
<tr>
<td>Fluoroquinolones</td>
<td>Fluoroquinolones</td>
</tr>
<tr>
<td>Other Antibiotic</td>
<td>Other Antibiotic</td>
</tr>
</tbody>
</table>

**Notes:** This figure reports the proportion of interactions in each study strata that resulted in the indicated outcome for an SP presenting Case 1 or Case 2 as indicated. The STCI management measure is defined as each Case 1 interaction that received a referral, a chest X-ray, a sputum AFB test, or an Xpert CBNAAT test or other drug-susceptibility test; and for each Case 2 interaction that received a referral or an Xpert CBNAAT test or other drug-susceptibility test. TB: tuberculosis, AFB: acid-fast bacillus; Xpert MTB/RIF: CBNAAT mycobacterium tuberculosis / rifampicin sensitivity testing. Medications from each interaction were ex-post coded by name to correspond to ATC code classifications. Fluoroquinolone antibiotics were defined as ATC codes beginning with J01M; steroids were defined as ATC codes beginning with H02, R01, or R03.
Figure A2. Regression comparison of public vs private sector non-MD providers

Notes: This figure reports the results of a series of regressions using both separately comparing the different types of public sector facilities with private sector non-MD providers. Each point reports the coefficient for the indicator variable of the private sector and the corresponding confidence interval. All measures are standardized to mean 0 and standard deviation 1 for illustration purposes. Estimates are controlled for individual SP ID and the case scenario; standard errors are clustered by facility. The measures are grouped into four families: Family 1 are the appropriate clinical management outcomes; Family 2 are the medication use outcomes; Family 3 are the subjective experience measures; and Family 4 are the unassociated characteristics. Each family’s confidence intervals are extended to the appropriate Bonferroni interval for the number of simultaneous hypothesis; and the p-values are considered significant if they satisfy the Benjamini-Hochberg step-up procedure (including values that may not be considered significant under their own Bonferroni interval). Measures are sorted by the magnitude and direction of the estimated coefficient.
Figure A3. Regression comparison of public vs private sector MD specialists

Notes: This figure reports the results of a series of regressions using both separately comparing the different types of public sector facilities with private sector MD specialist providers. Each point reports the coefficient for the indicator variable of the private sector and the corresponding confidence interval. All measures are standardized to mean 0 and standard deviation 1 for illustration purposes. Estimates are controlled for individual SP ID and the case scenario; standard errors are clustered by facility. The measures are grouped into four families: Family 1 are the appropriate clinical management outcomes; Family 2 are the medication use outcomes; Family 3 are the subjective experience measures; and Family 4 are the unassociated characteristics. Each family’s confidence intervals are extended to the appropriate Bonferroni interval for the number of simultaneous hypothesis; and the p-values are considered significant if they satisfy the Benjamini-Hochberg step-up procedure (including values that may not be considered significant under their own Bonferroni interval). Measures are sorted by the magnitude and direction of the estimated coefficient.
Figure A4. Time dimensions of interactions

Notes: This figure summarizes temporal characteristics of interactions with various types of providers for illustration purposes. The left panels display the time of day of all interactions that SPs were able to successfully complete in each sector. Histogram bars each cover a half-hour time interval and are reported as the percentage of interactions occurring in each time slot. The right panels summarize the time waiting for each interaction and the time with each provider (in minutes), presented as a box plot with the 5th, 25th, 50th, 75th, and 95th percentiles marked.
Figure A5. Public sector sample and administrative data