



## Tuberculosis Care in India: How Can Private Practitioners Make a Difference?

India accounts for 25% of the global tuberculosis (TB) burden, and for a third of the 'missing cases' that do not get diagnosed or notified.<sup>1</sup> The emergence of severe forms of drug-resistance has further complicated the picture.<sup>2</sup> Historically, little effort has been made to engage India's vast private health sector in TB control. This ignores the reality: at least 50% of India's TB cases seek care in the private sector, and private providers are often the first point of care even for patients treated in the public sector.<sup>3,4</sup>

Indian TB patients get diagnosed after a delay of nearly two months, and are seen by 3 different providers before a diagnosis is made.<sup>5</sup> Most poor patients begin seeking care in the informal private sector, including chemists and unqualified health providers.<sup>4</sup> At this base of the healthcare delivery pyramid, patients rarely get investigated for TB, even when they present with classic TB symptoms. Instead, informal providers give broad-spectrum antibiotics (e.g., fluoroquinolones) and remedies, such as cough syrups. When TB patients continue to have symptoms, informal providers tend to refer them to qualified physicians. By the time patients are referred up the pyramid, a few weeks may have already passed.

When patients present to qualified physicians, these doctors again try one or more rounds of broad-spectrum antibiotics before investigating for TB. Even when TB is considered likely, private physicians tend to order tests that are non-specific, such as complete blood count, erythrocyte sedimentation rate (ESR), Mantoux test or TB Gold, and chest X-rays. They rarely seek microbiological confirmation via sputum smear microscopy, culture or polymerase chain reaction tests.<sup>6</sup> Furthermore, culture, and drug susceptibility tests (DST) are rarely performed on patients who are at high risk of drug-resistance. Private practitioners and private laboratories also tend to prefer blood as the sample for TB diagnosis, when all guidelines recommend sputum testing.<sup>7</sup> This

results in considerable misdiagnosis and adds to the economic burden on patients.<sup>8</sup>

Even if the diagnostic hurdle is overcome, TB treatment in the private sector is far from satisfactory. When private practitioners initiate anti-TB treatment (ATT), they tend to use drug regimens that are not recommended by the World Health Organization (WHO) or the International Standards of TB Care (ISTC). This has been shown in many studies.<sup>9,10</sup> Furthermore, private practitioners often fail to ensure treatment completion.<sup>6</sup>

Thus, patients end up moving from one provider to another, and each time the drug regimen gets modified without adequate DST to guide the choice of drug combinations. This creates a perfect environment for drug-resistance to emerge or worsen. Ultimately, patients with treatment failure or relapse end up with private chest physicians who start the second-line therapies, often without adequate DST results to guide the therapy. Outcomes of these patients are often poor, and the really poor patients with MDR-TB often end up at public hospitals and sanatoria where many die of complications. During this long pathway, TB patients spend a lot of money, and infect many others in their community.

How can this depressing story change for the better? We believe that without large-scale engagement of the private sector, it will be impossible to control TB in India.<sup>11</sup> We suggest that the following 5 strategies, if implemented by private practitioners, will go a long way in improving outcomes of patients:

1. Think TB!
2. Actively seek to confirm TB using appropriate sputum tests
3. Use the correct drug regimen
4. Establish a mechanism for ensuring adherence and treatment completion
5. Notify all TB cases and refer patients with risk factors for drug-resistance.

Thinking of TB is the first step in fixing the problem of diagnostic delay. All patients with cough lasting two or more weeks or with unexplained findings suggestive of TB on chest X-rays, should be evaluated for TB.<sup>12</sup> Currently, too many providers are using nonspecific treatments. Changing this behavior is critical for reducing diagnostic delays in TB.

Once a patient with suspected TB reaches a qualified provider, the next step is to order a WHO-endorsed sputum test for TB. TB must be microbiologically confirmed, either using smear microscopy, Xpert MTB/RIF (i.e., GeneXpert), or liquid cultures. The Xpert MTB/RIF test has high accuracy for pulmonary TB, extrapulmonary TB, childhood TB, and MDR-TB.<sup>13-15</sup> WHO-endorsed sputum tests are now available at more affordable prices to the private sector via more than 55 laboratories across India, via the IPAQT initiative ([www.ipaqt.org](http://www.ipaqt.org)).<sup>16</sup>

Once TB is microbiologically confirmed, the next step is to begin the correct anti-tubercular treatment (ATT) regimen. All patients who have not been treated previously and do not have other risk factors for drug resistance should receive a WHO-approved first-line treatment regimen for a total of 6 months.<sup>12</sup> The initial phase should consist of two months of isoniazid, rifampicin, pyrazinamide, and ethambutol. The continuation phase should consist of isoniazid and rifampicin given for 4 months. The continuation phase can include ethambutol, in addition to isoniazid and rifampicin, in settings with high levels of isoniazid resistance. Drug dosages should conform to ISTC recommendations.

Adherence to the full course of ATT is critically important to ensure high cure rates and to prevent the emergence of drug-resistance. But private practitioners struggle to ensure adherence. Most do not maintain any medical records, and this makes it very difficult to follow-up with patients. Also, private practitioners do not prefer intermittent therapy, and find it difficult to implement directly observed treatment in their busy practice.

Every TB patient should receive counselling at the start of TB treatment. By notifying all TB cases to the local health authorities, private practitioners can seek help from the public sector to help follow-up patients who default. Indeed, it is mandatory for all TB cases in the country to be notified. Physicians can also work with community-based organizations, and enlist community health workers to supervise treatment. Mobile phone reminders (e.g., via text messages) may also help.<sup>17</sup>

Lastly, all patients with risk factors for drug-resistance must be investigated for MDR-TB using

DST. Since MDR-TB requires long-term and specialized management, patients should be referred to chest and TB specialists, either in the private sector, or in the public sector where free treatment is available under the programmatic management of drug-resistant TB.

Since chest physicians usually see patients who have already been treated elsewhere, they should routinely order DST for all patients. For DST, an Xpert MTB/RIF test or a line probe assay can be ordered as the initial test. If rifampicin resistance is detected on these rapid tests,<sup>15</sup> liquid culture and DST for isoniazid, fluoroquinolones and second-line injectable drugs should be performed promptly. Patient counselling and education, as well as an empiric second-line treatment, should begin immediately to minimize the potential for transmission.

Patients with MDR-TB should be treated with specialized regimens based on suspected or confirmed DST patterns.<sup>12</sup> At least pyrazinamide and four drugs to which the organisms are known or presumed to be susceptible, including an injectable agent, should be used in a 6–8 month intensive phase, and at least 3 drugs to which the organisms are known or presumed to be susceptible, should be used in the continuation phase. Treatment should be given for at least 18–24 months beyond culture conversion.

If the above strategies are implemented widely in the private sector, it might improve the quality of TB care in the country.<sup>18</sup> Most importantly, it can transform the lives of patients who are currently running from pillar to post to get adequate care.

*Conflicts of interest:*

None disclosed

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## REFERENCES

1. World Health Organization. Global Tuberculosis Control: WHO Report 2013. Geneva: WHO, 2013.
2. Udawadia ZF. MDR, XDR, TDR tuberculosis: ominous progression. *Thorax*. 2012;67(4):286-8.
3. Satyanarayana S, Nair SA, Chadha SS, et al. From where are tuberculosis patients accessing treatment in India? Results from a cross-sectional community based survey of 30 districts. *PLoS One*. 2011;6(9):e24160.
4. Kapoor SK, Raman AV, Sachdeva KS, et al. How did the TB patients reach DOTS services in Delhi? A study of patient treatment seeking behavior. *PLoS One*. 2012;7(8):e42458.
5. Sreeramareddy CT, Qin ZZ, Satyanarayana S, et al. Delays in diagnosis and treatment of pulmonary tuberculosis in India: a systematic review. *Int J Tuberc Lung Dis*. 2014;18(3):255-66.
6. Achanta S, Jaju J, Kumar A, et al. Tuberculosis management practices by Private Practitioners in Andhra Pradesh, India. *PLoS One*. 2013;13(8):e71119.
7. Jarosawski S, Pai M. Why are inaccurate tuberculosis serological tests widely used in the Indian private healthcare sector? A root-cause analysis. *J Epidemiol Global Health*. 2012;2:39-50.
8. Pai M, Das J. Management of tuberculosis in India: time for a deeper drive into quality. *Natl Med J India*. 2013;26(2):e1-e4.
9. Udawadia ZF, Pinto LM, Uplekar MW. Tuberculosis management by private practitioners in Mumbai, India: has anything changed in two decades? *PLoS One*. 2010;5(8):e12023.
10. Mishra G, Mulani J. Tuberculosis prescription practices in private and public sector in India. *NJIRM*. 2013;4(2):71-8.
11. Baloch NA, Pai M. Tuberculosis control: business models for the private sector. *Lancet Infect Dis*. 2012;12(8):579-80.
12. TB CARE I. International standards for tuberculosis care. The Hague: TB CARE I, 2014. Available from: <http://istcweb.org/> (accessed 17 April 2014).
13. Steingart K, Schiller I, Horne DJ, et al. Xpert® MTB/RIF assay for pulmonary tuberculosis and rifampicin resistance in adults. *Cochrane Database Syst Rev*. 2014(1):CD009593.
14. Denking CM, Schumacher SG, Boehme C, et al. Xpert® MTB/RIF assay for the diagnosis of extrapulmonary tuberculosis: a systematic review and meta-analysis. *Eur Resp J*. 2014 Apr 2.
15. World Health Organization. Policy update: automated real-time nucleic acid amplification technology for rapid and simultaneous detection of tuberculosis and rifampicin resistance: Xpert MTB/RIF system for the diagnosis of pulmonary and extrapulmonary TB in adults and children 2013. Available from: [www.stoptb.org/wg/gli/assets/documents/WHO%20Policy%20Statement%20on%20Xpert%20MTB-RIF%202013%20pre%20publication%2022102013.pdf](http://www.stoptb.org/wg/gli/assets/documents/WHO%20Policy%20Statement%20on%20Xpert%20MTB-RIF%202013%20pre%20publication%2022102013.pdf) (Accessed)
16. Pai M. Promoting affordable and quality tuberculosis testing in India. *J Lab Physicians*. 2013;5(1):1-4.
17. Denking CM, Grenier J, Stratis AK, et al. Mobile health to improve tuberculosis care and control: a call worth making. *Int J Tuberc Lung Dis*. 2013;17(6):719-27.
18. Pai M, Satyanarayana S, Hopewell PC. Improving quality of tuberculosis care in India. *Ind J Tuberc*. 2014;61(1):1-7.

On 24th March 2014, the Standards for TB Care in India (STCI) were officially released. The recommendations are broadly consistent with WHO and International Standards for TB Care recommendations cited in this editorial. STCI is available at: <http://www.tbonline.info/media/uploads/documents/214586958-standards-fortb-care-in-india-2014.pdf>