TB control: challenges and opportunities for India

Madhukar Pai*, Amrita Daftary and Srinath Satyanarayana

McGill International TB Centre, McGill University, Montreal, Canada

**Corresponding author: Present address: Dept of Epidemiology & Biostatistics, 1020 Pine Ave West, Montreal, QC H3A 1A2, Canada;
Tel: +514 398 5422; Fax: +514 398 4503; E-mail: madhukar.pai@mcgill.ca*

India's TB control programme has treated over 19 million patients, but the incidence of TB continues to be high. TB is a major killer and drug-resistant TB is a growing threat. There are several likely reasons, including social conditions and co-morbidities that fuel the TB epidemic: under-investment by the government, weak programme implementation and management, suboptimal quality of care in the private sector, and insufficient advocacy around TB. Fortunately, India possesses the technical know-how, competence and resources to address these challenges. The End TB Strategy by WHO offers India an excellent blueprint to advance the agenda of TB control.

Widespread implementation of the DOTS (Stop TB) Strategy since the late 1990s has cured millions of patients with TB, and saved many lives,[1] but the impact of this strategy on reducing TB transmission and incidence has been less than predicted.[2] India is a good case study. India's Revised National TB Control Programme (RNTCP) has successfully provided free TB treatment to over 19 million patients.[3] However, TB incidence continues to remain high. In 2013, India alone accounted for 25% of the 9 million global TB cases.[1] According to WHO estimates, India also accounts for a third of the 3 million 'missing' TB cases who are either not diagnosed or not notified.[3] TB is a major cause of death in India, and the emergence of severe forms of drug-resistant TB in urban areas such as Mumbai is another indication that the TB problem is not under control.[4]

What can explain the persistent high TB incidence, TB mortality and drug-resistance in India? We suggest that there are five main reasons.

First, the social conditions and co-morbidities that fuel the TB epidemic have been very poorly addressed in India. An estimated 300 million Indians still live in extreme poverty. India has been called the 'epicenter of global malnutrition' and the high prevalence of malnutrition is well documented.[5] According to the Global Nutrition Report, one in five Indian children under the age of 5 years suffer from wasting.[6] The association between malnutrition and TB in India is strong: about half of all cases of active TB are estimated to be attributable to undernutrition.[5] Diabetes is another important risk factor for TB,[7] and over 65 million persons are affected by diabetes in India, predicted to increase in the future as life expectancy rises and India continues to urbanise.[8] Furthermore, tobacco smoking is strongly associated with higher risk of TB mortality; according to one estimate, smokers accounted for 66% of males who died from TB in India.[9] Given this confluence of largely unaddressed social and economic determinants, it is not surprising that TB continues to be a persistent and grave threat to India's health. However, since issues such as malnutrition and tobacco control require inter-sectoral and inter-ministerial collaboration, the RNTCP has struggled to develop strategies for tackling the key social determinants that drive the epidemic in India.

Second, although the RNTCP has developed an ambitious National Strategic Plan (2012–2017) to achieve universal access to quality TB diagnosis and treatment,[3] investments by the government fall short of the estimated need.[10] Implementation of the National Strategic Plan requires a tripling of the budget during the prior plan, but, contrary to expectations, the Indian government has cut back on health expenditure.[11] India currently spends approximately 1% of its GDP on health. This not only falls short of the average allocation spent by other BRICS countries (Brazil, Russia, India, China and South Africa), it is also one of the lowest in the world.[11]

In this context of overall under-investment in health, and TB in particular, RNTCP continues to heavily rely on the insensitive direct smear microscopy technology.[12] Although the RNTCP has demonstrated great value in upfront drug-susceptibility testing, right at the time of initial diagnosis,[13] the scale-up of rapid, molecular testing has been limited, and universal access to drug-susceptibility testing is not likely in the near future. According to one study, India performs about 72 smears for every Xpert® MTB/RIF test done in the public sector; in comparison, South Africa, for example, performs about two smears for every Xpert® MTB/RIF test performed.[14] While multidrug-resistant TB treatment services have expanded, only 24 073 of the estimated 50 000–74 000 multidrug-resistant TB cases were initiated on treatment in 2014.[15]

Another concern is the weak implementation of the RNTCP at the state level, as observed by successive reviews of the RNTCP.[10]

Several staff positions, necessary for programme oversight and patient management remain unfilled in some states, and payment delays are widely acknowledged to be a huge problem. Procurement delays with new diagnostics, and drug stock-outs, further underscore the need for better supply chain management and forecasting.[10]

The scale of India's private medical sector cannot be underestimated[16]; about 80% of Indians seek private healthcare in general, and an estimated 50% of TB patients are managed outside the RNTCP.[17,18] The private sector in India is vast, fragmented, made up of diverse types of healthcare providers, and is largely unregulated.[16,19] While the RNTCP needs substantially higher resources, strengthening the public sector alone will not help control TB. In India, the private sector is a major provider of TB care, and quality of care is suboptimal in the private sector on many levels.[20]

A recent systematic review has shown that an average patient with TB is diagnosed after a delay of nearly 2 months, and after seeing three providers.[21] Another systematic review of 47 Indian studies showed large gaps in knowledge and self-reported practices of providers, suggesting poor standardization of TB management in the private sector.[20] Of 22 studies evaluating provider knowledge about the use of sputum smears for diagnosis, 10 found that less than half of providers had correct knowledge. In 11 of 14 studies that assessed treatment, less than one-third of providers knew the standard regimen for drug-susceptible TB. This systematic review also showed higher levels of appropriate knowledge or self-reported practice in the public sector compared to the private sector.[20]

A recent study, using standardised (simulated) patients, confirmed the overall low quality of TB care in the private sector, and revealed a substantial gap between what doctors know and what they actually do in their practice.[22] At the primary care level, TB testing is rare, even among those with classic chest symptoms, and most patients are managed with repeated cycles of empirical broad-spectrum antibiotic therapies, perpetuating diagnostic delays and drug-resistance.[22,23]

Lastly, unlike the case of HIV/AIDS, advocacy around TB has been weak in India, contributing to limited political commitment. Historically, civil society and patient engagement has been low; this has marginalised the involvement of key affected populations in TB policymaking and programme planning.

While we have described several major challenges for TB control in India, it is important to underscore that India possesses the technical know-how, competence, and resources to address them. Indeed, the RNTCP has successfully scaled-up basic TB services for the entire Indian population, testing over 85 million people and treating over 19 million TB patients to date.[15] This is a huge accomplishment. At a national level, India has made several ambitious policies and plans.[15,24] These include the ban on inaccurate serological TB tests, a policy discouraging misuse of interferon-gamma release for active TB, mandatory notification of all TB cases, development of the National Strategic Plan, and publication of the standards for TB care in India.[15] India has rolled-out the Nikshay electronic platform for case notification and tracking, and several voucher-based public-private mix models are being tried out, bringing optimism to the field.[15,25] India has also made numerous contributions in the area of TB research, including large vaccine, drug and diagnostic trials, and operational research to improve programme efficiency.[15]

The End TB Strategy by WHO offers India an excellent blueprint to advance the agenda of TB control.[26] Currently, India is not on target to meet the End TB Strategy goals. But with high level leadership, political commitment, active engagement of both public and private sectors, and active civil society and community support, India could blaze the trail for other high burden countries to emulate and demonstrate that it is indeed possible to end the TB epidemic.[24] The recent involvement of celebrities, such as Amitabh Bachchan, and high-net-worth individuals, such as Ratan Tata, have provided a major boost to TB advocacy efforts. This will, hopefully, encourage other key national figures and celebrities to engage in TB control efforts, and convince the political leadership to invest more in TB, and in public health, in general. Ultimately, the Indian government will need to step up and take a big role in TB control and allocate substantially higher resources for TB control.

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