Editorial

Elimination of tuberculosis in India: Accelerating to the Sustainable Development Goals targets

Over its long association with tuberculosis (TB), India has been one of the pioneers in research globally, and in innovations in programming. Since the beginning of the 20th century, TB has been categorized as a paramount public health concern in India. For 2023, the incidence of TB in India is estimated at 2.80 million (195/100 000) and mortality at 323 000 (22/100 000). In 2015, the incidence was 3.13 million (237/100 000) and mortality was 424 000 (32/100 000).[1] In 2015, 35% of the households affected by TB suffered catastrophic expenditure.[2] A recent study in India found 39% of the TB cases to be subclinical[3] and an earlier one found this in more than 50% of the cases.[4] It is critical to underscore that, in 2023, 27.5% of the world's TB cases, 47% of the new multidrug resistant (MDR) TB cases and about 22% of deaths due to TB took place in India.[5] Importantly, despite a major disruption during the pandemic, for some TB-services India restored performance to pre-pandemic levels by 2022 and for others exceeded pre-pandemic levels.

Top risks factors for TB include malnutrition (BMI [body mass index] <18.5 kg/m^2), HIV, diabetes, silicosis, substance-abuse illness, smoking, and drinking alcohol. Socio-cultural-economic determinants and vulnerabilities for TB include belonging to a scheduled tribe, gender, poverty, inadequate social protection, inadequate housing, displacement, imprisonment, inadequate healthcare access, and stigma and discrimination. Hence, taking the circumstances of the person with TB (PwTB) holistically into consideration becomes essential for not only timely detection and but also clinical management and treatment success.

Under its commitments to the UN's Sustainable Development Goals (SDGs), India aims to reduce the baseline numbers of 2015 for TB incidence by 80%, TB mortality by 90%, and households with TB-related catastrophic expenditure to zero by 2030 (an accelerated timeline till 2025 was announced in 2018, but will not be met). Given the vulnerabilities and risk factors for TB, outcomes with TB in India are clearly bidirectionally intertwined with other SDGs such as achieving universal health coverage, ending malnutrition, eradicating poverty, and strengthening social protection.

The Ministry of Health and Family Welfare (MoHFW), Government of India runs the National TB Elimination Programme (NTEP) for achieving TB goals with the Central TB Division (CTD) as the apex technical body for TB. Public health institutes and expert committees support CTD with further technical expertise and state and sub-state structures (with designated manpower) deliver services under the programme down to the community level. NTEP is implemented across India through this system by the Central and State Governments under the National Health Mission framework. Additionally, NTEP engages with the private sector and other relevant ministries for furthering TB goals. The 2023 approved annual budget for NTEP stood at 3113 crores.[1]

It will be useful to frame the discussion on accelerating the achieving of SDG targets around the three broad objectives of mortality reduction, timely and quality detection, and incidence/prevalence reduction as this will help appreciate nuances and develop actionable and measurable plans.

Reduction of mortality

Substantially and sustainably reducing mortality of TB in India must be the top priority for NTEP for the foreseeable future. The pathway of reducing TB mortality is as much about medicine as it is about the domain of management.

For the estimated 110 000 new patients who had drug resistant TB (DR-TB) in 2022 treatment outcomes may be far worse than for those with drug susceptible TB.[5] Recently, the Government of India (GoI) has taken a policy step to introduce a new regime for all people with DR-TB, called BPaL/M (bedaquiline, pretomanid, linezolid, moxifloxacin), that shows treatment success of 86% to 88% compared with 50%, reduces treatment duration from 18 to 24 months to 6 months and the daily doses of tablets from around 14 to 3, compared to standard regimens.[6] BPaL/M has also been shown to be more cost-effective for health systems with reduced patient-incurred costs than standard regimens. BPaL/M is likely to be rolled out soon, and will help save thousands of additional highly vulnerable people.[7]

Nutrition could be considered one of the bedrocks of fighting TB. For improving treatment outcomes, catering to additional nutritional needs, and reducing out-of-pocket expenditure; in October this year, GoI enhanced monthly nutrition support to all persons with TB (PwTB) from 500 to 1000 through direct benefits transfer for the entire treatment duration. Simultaneously, GoI has also announced energy dense nutrition supplementation (EDNS) support to all PwTB with BMI <18.5 kg/m^2 for first 2 months of treatment and nutrition coverage for family members of PwTB under Nikshay Mitra component of NTEP.[8] For the latter two policy measures, localized solutions and supply chain effectiveness will be key.

Already included in NTEP, differentiated care management (DCM) is a proven, simple, and low resource approach for mortality reduction amongst highly vulnerable people with TB (people living with HIV [PLHIV], undernourished, those with diabetes, those with pedal oedema, those with substance use illness, the elderly, pregnant women, children, those who are poor, tribals, those sharing contact with known PwTB). By rigorously implementing DCM through simplified, optimized, and tailor-made guidelines healthcare workers can rapidly identify, frequently monitor, and appropriately support with intense clinical care such vulnerable people. The Tamil Nadu government and Indian Council of Medical Research-National Institute of Epidemiology have jointly led a successful programme called TN-KET on these lines.[9] DCM will only succeed when the entire primary healthcare team at the sub-district level cohesively gets involved in it through frequent and routine touchpoints with PwTB in their areas. This dedicated, intensive support programme could also reduce mortality in people with DR-TB, those who are socio-economically very disadvantaged, where treatment has previously failed, who face substantial stigma, and are clinically at high risk of mortality.[10] A well-considered nationally enforced guideline for ensuring that no PwTB is denied a bed is a critical enabler for reducing TB-mortality. NTEP should also mainstream extrapulmonary TB now since it contributes 20%–24% of all cases, disproportionately affects immunosuppressed people, and often goes undiagnosed or inadequately managed.[2]

Learning from mortality itself is critical. TB death audits on the lines of maternal death audits should be undertaken under the aegis of the District Collector for root cause assessment and NTEP improvements.

Timely and accurate detection

For finding the missing PwTB, TB screenings must now rely on X-rays instead of symptoms, since the former is more reliable in all forms of TB, especially for the very large share of subclinical cases in the community. X-ray machines are available across the private and public health system in India and the newer handheld X-ray machines procured by NTEP can be deployed in community settings using mobile medical vans, increasing access to quality screenings and reducing burden on confirmatory diagnostics. X-ray machines should be coupled with ICMR-validated AI TB-diagnostic solutions for turn-around time in minutes, high throughputs, and equitable access in challenging areas and population segments. Some states are already conducting integrated camps where TB X-ray screenings are leveraged by checking for other issues such as chronic obstructive pulmonary disease (COPD), lung cancer, and diabetes.

Capitalizing on the strong political commitment for TB, NTEP should scale up nucleic acid amplification tests (NAAT) from the current 21%[2] to 100% of presumptive

cases. Optimizing the diagnostics network for NAAT platform location, number of daily shifts, sample transportation, and supply chain efficiencies can help achieve this goal of offering 100% NAAT. The recent inclusion of a third NAAT platform (PathoDetect) in NTEP and ICMR's ongoing validation of open NAAT systems for TB will help scale NAAT testing and improve India's TB notification rate; one of the headline indicators for gauging programme performance and informing planning and service delivery.

Universal access to newer detection tools such as urine-based lipoarabinomannan (LAM) for PLHIV and stool tests for children with TB will be critical for helping vulnerable PwTB. A few other promising point of care (tongue swab) tests that are on the anvil can reduce turnaround time and increase testing rates.

Reduction in incidence/prevalence

For reducing prevalence of TB, India must fully use all existing tools already built into NTEP to detect and treat all cases in the country as this will drastically reduce transmission. India should explore vaccines currently being trialed in the country and outside. In different stages, some of these vaccines will furnish data earlier than others. However, these newer vaccines are still some time away from programmatic rollout; necessitating a parallel and rapid approach to commence sooner.

Acting almost as a vaccine; nutrition consisting of adequate calories, proteins and micronutrients can substantially reduce incidence of TB. A recent globally recognized trial from Jharkhand established that nutrition as a bio-social intervention can reduce TB incidence by close to 50%.[11] The even larger advantage of this intervention is that nutrition promotes overall health through multiple pathways. A multi-sectoral approach galvanized by the seniormost leadership of the Central and State Governments can deliver this intervention in the hands of vulnerable population segments across India.

Opportunities and planning

Many of these interventions can be accelerated or deployed right away as they are simple tweaks or already approved under the NTEP. Others can be built into the new National Strategic Plan (NSP) for TB that will now be drafted for the next 5 years. Additionally, the NSP can provide the roadmap leading up to 2030 for ramping up interventions and concomitant financing while integrating NTEP further within the general health system and greater leveraging and incentivizing of quality private provisioning as an extended arm under the programme.

Scope of civil society participation in NTEP should be immediately widened such that programme managers benefit from quick feedback from PwTB, gain support for programme design, and build deep inroads into communities. Civil society can also play a paramount role in devising interventions on mental health and stigma which are one of the root causes of poor detection, adherence and treatment outcomes.

Field monitoring of interventions by the NTEP staff, general health system, development partners and medical colleges will have to be invigorated to a greater degree through on-ground mentorship, indicator-based reporting, and structured and routine reviews at all levels. This must work in concert with enhanced and higher order use of programmatic data for generating insights for problem identification and solution building and disease surveillance improvements.

The necessary whole-of-society approach to achieving TB goals will require far higher engagement with and commitment from corporate India to capitalize on opportunities for screening and treatment.

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[**To cite:** Swaminathan S. Elimination of tuberculosis in India: Accelerating to the sustainable development goal targets. *Natl Med J India* 2024;**37:**237–40. DOI: 10.25259/NMJI_1496_2024]