TB during COVID-19

(Shibu Vijayan is a physician and Global TB Technical Director at PATH, Mumbai, India.

Madhukar Pai is a physician and Director of the McGill International TB Centre, Montreal, Canada.)

Dangers of TB transmission

- India has the highest burden of tuberculosis (TB) in the world.
- Even as the government was pushing to end TB by 2025, the COVID-19 pandemic has caused a massive disruption in TB services.
- TB case notifications across India have dropped by over 50% since March, with an estimated 3,00,000 missed case notifications (until May 30).
- This is worrisome, since undiagnosed TB can worsen patient outcomes and increase transmission in the community.
- As the lockdown ends, we will see a big surge in people seeking care with TB and COVID-19 symptoms.
- However, people will struggle to get care because the public sector is still dealing with the pandemic, while the private sector is not functioning at normal capacity or is reluctant to manage people with fever and cough.
- To find the missed TB patients, we will need to find ways to rapidly resume public TB services, integrate TB and Covid-19 testing and be creative about engaging the private health sector to augment public TB services.
- It is critical for the National TB Elimination Programme to resume routine TB services, which include diagnostic services, such as microscopy and rapid molecular testing, as well as drug-susceptibility testing.

Dual testing

- Since fever and cough are symptoms of both TB and COVID-19, simultaneous screening and testing can be encouraged. Thankfully, India has access to three existing technologies that permit dual testing for both infections.
- The first is the digital chest x-ray (CXR), which could be deployed along with artificial intelligence (AI) based tools for both TB and COVID-19.
- AI-based algorithms are now available that obviate the need for trained radiologists to read the x-rays. If a CXR is suggestive for TB on the AI algorithm, then a confirmatory test such as GeneXpert can be done to confirm TB and also detect drug-resistance.
- One such AI-enabled screening tool is called qXR, developed by Qure.ai, an Indian company. Several studies show accuracy that is comparable or better than human radiologists.
- The screening tool, qXR, has now added the capability of detecting signs of COVID-19 from the x-rays images.
- Based on an estimated 3,00,000 missed cases during the national lockdown, around 10,50,000 CXR (assuming 70% of these are pulmonary TB cases and 5 CXRs are needed to detect one patient with pulmonary TB) will be required for detecting TB cases.
- This is an overwhelming figure for any health system especially during a pandemic. However, a dynamic partnership with 80,000 licensed diagnostic radiology facilities will help combat this.
CXR screening will require confirmatory testing for both diseases, and molecular testing is the most accurate and rapid option. There are two technologies already in use in India that could be leveraged for simultaneous testing of sputum samples for both infections.

- One is called GeneXpert. India has over 1,100 of these systems in use. A large number of private labs, too, have this technology. On this platform, TB can be detected using a cartridge called Xpert MTB/RIF and COVID-19 by using the Xpress SARS-CoV2 cartridge.
- The second molecular platform is called TrueLab, developed by an Indian company – Molbio Diagnostics.
- This technology is already being used in some states and in private labs to test for TB using a chip called Truenat MTB.
- Molbio now has a chip called Truenat Beta CoV that can be used for COVID-19. This chip, along with Xpress SARS-CoV2 cartridge, has been approved by ICMR for emergency use for COVID-19 testing.
- Typically, TB testing requires sputum sample. Now, SARS-CoV-2 testing is done using nasopharyngeal swabs, but there is no reason why sputum samples cannot be used, since sputum is generated deeper in the lungs. However, it is important to validate both test molecular platforms for simultaneous testing using the same sputum sample.

**All hands on the deck**

- To detect the missed thousands of TB patients, we need to leverage our best technologies and find ways to integrate testing for both respiratory infections.
- We need to integrate our public and private health sectors.
- This is evident in the success of the Private Provider Interface Agency (PPIA) model launched in Mumbai by the Government of India, WHO and PATH and the subsequent large scale, pan-India version of it called the JEET (Joint Effort for Elimination of Tuberculosis) project.