

Adapting TB services during the COVID-19 pandemic in Mumbai, India

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Dear Editor,

The COVID-19 pandemic has resulted in rapid and profound changes in health systems worldwide to cope with the unexpected challenges. Essential health services, such as TB services, have been neglected, which poses a major risk of reduced TB diagnosis and treatment initiation leading to a potential significant increase in TB-related morbidity and mortality in the future.^{1,2} The WHO has provided guidance for TB care, but these adaptations need to be tailored according to the context.³

In Mumbai, the most populous city in India, Médecins Sans Frontières (MSF) provides diagnostic and treatment services to patients with rifampicin/multidrug-resistant TB (RR/MDR-TB) in collaboration with India's National TB Elimination Programme at the outpatient department of Shatabdi Municipal Hospital. The hospital offers care to patients residing in M-East Ward, where nearly 73% of the 800,000 inhabitants live in slums,⁴ which

presents a major TB hotspot in the state and the country.⁵ The ambulatory model of care entails free of cost services comprising early diagnosis, treatment (including treatment with bedaquiline, delamanid and imipenem if required), decentralised follow-up at health posts, and adherence support including counselling. As of June 2020, there were 1451 active RR/MDR-TB patients on treatment, 60% were females, approximately 37% had fluoroquinolone resistance, 1.9% were HIV-positive and 10% had diabetes.

In July 2020, more than 85,000 cases of COVID-19 were reported in Mumbai.⁶ Whereas stringent COVID-19 responses may curb its spread and avoid deaths attributable to COVID-19, modelling has shown the potential long-term effects of the disruption to TB care. Three months of lockdown in India, followed by a 10-month recovery period could incur 1,788,100 excess TB cases and 511,930 excess TB deaths between 2020 and 2025.¹ It is essential we avoid such catastrophic outcomes and adapt services to provide continuity of care.⁷

As the first cases of COVID-19 were identified in India, the provision of essential services in Mumbai (including those for TB/DR-TB), were heavily affected by lockdown regulations and reassignment of health care workers to COVID-19. To ensure continuity of care, MSF-supported TB services have been adapted to protect both health care workers (HCWs) and patients, focusing on infection prevention and control (IPC) measures, screening, linkage to COVID-19 care and the avoidance of non-essential visits.⁸⁻¹⁰ The adapted IPC strategy aims to reduce the likelihood of nosocomial transmission (including systematic screening of HCWs) and community transmission (through health promotion and distribution of sanitation kits). The Table summarises the main challenges faced during this adaptation of TB services and the proposed solutions. The patient flow and adaptations are described below:

- 1 Patient flow. Upon arrival, patients receive a token with a serial number according to the service needed: report collection, sputum sample delivery, and consultation. Patients line up in one of three queues in an external waiting area, where crowd controllers ensure social distancing. Here, laboratory reports are distributed and sputum containers collected. Patients are screened for COVID-19 by a nurse using an infrared thermometer and a clinical screening tool to identify presumed cases or history of contact.¹¹ In case of temperature $\geq 38^{\circ}\text{C}$ (or any positive answer to the questionnaire), patients are directed to a secondary screening area, where a designated doctor assesses

and refers patients to the COVID-19 clinic available at the same hospital complex for further management and testing.

- 2 TB and DR-TB treatment and follow-up. The need to reduce visits to health centres and contact with HCWs has created an opportunity to finally switch from injectable-based to oral regimens for DR-TB, as recommended by the WHO.¹² The follow-up visits take place at 2 weeks, 4 weeks and monthly thereafter in case of bedaquiline and/or delamanid-containing regimens, and every 3 months when new drugs are not administered. Visits include ECG and laboratory analysis if required. Patients with drug-susceptible TB are given appointments at Months 2 and 6.
- 3 Drug dispensing. Drug dispensing is decentralised with the exception of delamanid and imipenem, which is provided intravenously twice per day via a PICC (peripherally inserted central catheters) line or port-a-cath by community nurses conducting home visits with appropriate personal protective equipment (PPE).¹³
- 4 Patient support activities. The counselling session at treatment initiation is performed face-to-face with strict IPC measures, whereas follow-up sessions take place via telephone or video call. During each remote contact with the patients, counsellors also ask about any COVID-19 symptoms and/or adverse events during DR-TB treatment. In case of severe symptoms, patients are directed to the clinic; if mild, they are listed for tele-consultation with a doctor. A social worker connects patients facing severe socio-economic challenges with individual donors or NGOs that provide financial and social support.
- 5 Health promotion. Community HCWs provide health education information in the external waiting areas, and informative videos are displayed in the internal waiting areas. Posters are distributed in the clinics. Messages are also conveyed during face-to-face and tele-counselling sessions and sent via digital platforms.
- 6 Telemedicine. Doctors calls to patients are scheduled for clinical consultations. Prescriptions are sent via digital platforms and patients book-in for face-to-face consultations as required.
- 7 PPE. Adequate PPE^{8,14} is provided to HCWs according to the risk exposure, which may include N95 respirators, face shields, gloves, gowns and/or hoods, as well as aprons, gumboots and duty gloves for hygiene workers.
- 8 Staff management. Reduced numbers of HCWs work in weekly shifts and training of staff on COVID-19. In case of any new respiratory symptoms or fever, the staff are

requested to inform a designated doctor for further management and to refrain from coming to work.

Although these changes are adaptations to a negative situation, positive aspects should also be acknowledged and included in the advocacy agenda for overall improvement of TB services. The most important positive aspects include the accelerated switch from injectable- to all-oral regimens for RR/MDR-TB, and a more robust shift towards decentralisation and community delivery of services. This includes home-based care, thereby keeping visits to health facilities to a minimum, while enhancing support through new technologies. Furthermore, reduced dependence on directly observed treatment (DOT), including use of video-observed therapy (VOT) and other forms of patient-centred adherence support should be highlighted. Finally, the integration of COVID-19 screening in the patient flow shows the potential for other forms of integrated services, such as non-communicable disease screening, mental health, health promotion and testing for future epidemics.

To conclude, continuity of services for RR/MDR-TB care during the COVID-19 pandemic is of utmost importance and requires adaptations to the existing system to protect both patients and HCWs. This article is designed to guide other services to maintain their activities and integrate new technologies. Some lessons learned may have beneficial long-lasting impact to our approach to TB care, with more emphasis on a patient-centred approach.

References

- 1 Stop TB Partnership. The potential impact of the COVID-19 response on tuberculosis in high-burden countries: a modeling analysis. 2020. Geneva, Switzerland: Stop TB Partnership, 2020. http://www.stoptb.org/assets/documents/news/Modeling%20Report_1%20May%202020_0_FINAL.pdf
- 2 Dara M, et al. New diseases and old threats: lessons from tuberculosis for the COVID-19 response. *Int J Tuberc Lung Dis* 2020; 24(5): 544–545.
- 3 World Health Organization. COVID-19: considerations for tuberculosis (TB) care, 11 May 2020. Geneva, Switzerland: WHO, 2020. <https://www.who.int/docs/default-source/documents/tuberculosis/infonote-tb-covid-19.pdf>
- 4 Tata Institute of Social Sciences. Social economic conditions and vulnerabilities: a report of the baseline survey of M(East) Ward, Mumbai. Mumbai, India: TISS, 2015.

- 5 National Tuberculosis Elimination Programme. India TB report 2020. New Delhi, India: NTP, 2020. <https://tbcindia.gov.in/showfile.php?lid=3538>
- 6 Municipal Corporation Greater Mumbai Public Health Department. COVID-19 daily update. Mumbai, India: Mumbai Municipal Corporation, 2020.
- 7 Gupta A, et al. Impact of COVID-19 on tuberculosis services in India. *Int J Tuberc Lung Dis* 2020; 24(6): 637–639.
- 8 Leung CC, et al. Mask wearing to complement social distancing and save lives during COVID-19. *Int J Tuberc Lung Dis* 2020; 24(6): 556–558.
- 9 Cox V, et al. Critical changes to services for TB patients during the COVID-19 pandemic. *Int J Tuberc Lung Dis* 2020; 24(5): 542–544.
- 10 Sandy C, et al. Preparing national tuberculosis control programmes for COVID-19. *Int J Tuberc Lung Dis* 2020; 24(6): 634–636.
- 11 World Health Organization. Global surveillance for COVID-19 caused by human infection with COVID-19 virus: interim guidance, 20 March 2020. Geneva, Switzerland: WHO, 2020. <https://www.who.int/publications/i/item/global-surveillance-for-covid-19-caused-by-human-infection-with-covid-19-virus-interim-guidance>
- 12 World Health Organization. WHO consolidated guidelines on drug-resistant tuberculosis treatment. Geneva, Switzerland: WHO, 2019. <https://apps.who.int/iris/bitstream/handle/10665/311389/9789241550529-eng.pdf?ua=1>
- 13 Chavan VV, et al. Ambulatory management of pre- and extensively drug resistant tuberculosis patients with imipenem delivered through port-a-cath: a mixed methods study on treatment outcomes and challenges. *PLoS One* 2020; 15(6): e0234651.
- 14 World Health Organization. Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages: interim guidance, 6 April 2020. Geneva, Switzerland: WHO, 2020. [https://www.who.int/publications/i/item/rational-use-of-personal-protective-equipment-for-coronavirus-disease-\(covid-19\)-and-considerations-during-severe-shortages](https://www.who.int/publications/i/item/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages)

Table. Main challenges in the adaptation of the TB clinic to the COVID-19 pandemic

Issue	Challenges	Solutions
Identification and management of suspected COVID-19 cases	Identification of suspected COVID-19 cases	Screening of patients and contacts by a nurse
	Overlapping COVID-19 and TB symptoms	Suspects are assessed by a dedicated doctor who will decide the next actions to be taken
	Isolation of suspected cases	Individuals screened positive directed to a designated COVID-19 area in the clinic
IPC measures for airborne, droplet and contact transmission	Testing and management of suspected cases	Immediate referral to a COVID-19 clinic for further management. Follow-up is done by telephone call
	Ensure social distancing	Crowd controllers, floor markings and seats keeping a distance of 1.5 m apart
	Avoid crowding inside the health facility	Limited number of patients (along with one accompanying person) is allowed inside at a time; external waiting area
	Ensure adequate ventilation	Fans placed in the waiting area and behind HCWs in their workstations
	Hand sanitisation	Hand washing point for patients at the entrance; hand sanitiser for staff at each workstation
	Use of adequate PPE	HCWs wearing PPE as appropriate to their role and keeping 1.5 m distance from patient if possible Patients and accompanying person wearing masks
	Cleaning and disinfection	Performed 3 times per day in high-transit areas in 3 steps: soap and water; water; chlorine 0.1%
Avoid unnecessary visits to the health facility	Risk of asymptomatic and pre-symptomatic transmission	Use of PPE by HCWs irrespective of whether patients screen positive, training of HCW, patients, community
	Visits for drug refills	Decentralised drug distribution model in health posts with longer drug refills; in some cases, refills delivered at home
	Implementation of telemedicine	Consultations and counselling sessions conducted using digital

Revised schedule of visits	platforms/telephone whenever possible Reduced number of face-to-face visits, combined with telemedicine
Adapted DOT	Performed for at least 14 days, though calls missed
All-oral regimen for DR-TB	Avoid the need for daily SLI injections

IPC = infection prevention and control; HCW = health care worker; PPE = personal protective equipment; DOT = directly observed treatment; DR-TB = drug-resistant TB; SLI = second-line injectable.