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Critical changes to services for TB patients during the COVID-19 pandemic

Dear Editor,

To support tuberculosis (TB) patients during the COVID-19 pandemic, it is essential, both to patients and the healthcare system, to minimise unnecessary visits to health facilities. At this crucial point of time in the ongoing TB epidemic, we outline key adaptations to TB service delivery that should be considered in high TB burden settings. Our suggestions focus on the primary care level to reduce the risks of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) exposure during clinic attendance while prioritising the provision of uninterrupted TB treatment.

Healthcare providers in such settings are already familiar with TB infection control measures during their daily interactions with patients. However, it is paramount that resources are prioritised to remind and re-train staff on the importance of universal safety precautions, appropriate use of personal protective equipment and criteria for self-isolation to reduce the concomitant spread of COVID-19 in TB clinics. In addition, all TB patients should receive and wear a surgical mask while at the facility and be screened for COVID-19 through an appropriate triage system. TB patients screening negative for COVID-19 should be triaged directly to TB services. TB patients screening positive for COVID-19 should be kept separate within the COVID-19 investigative area (or at least 1.5 metres apart from another COVID-19 person under investigation) and TB services informed of their arrival. Following clinical assessment, visit frequency/treatment refill length should be determined by the clinician to avoid unnecessary visits during the COVID-19 pandemic. Specific adaptations are described for drug-susceptible TB patients (DS-TB), drug-resistant TB patients (DR-TB) and TB patients who are unwell.[1]

Care for DS-TB patients

For DS-TB patients starting treatment who are relatively well, sufficient intensive phase TB treatment should be provided so that patients only return to the health facility for clinical assessment and to switch to the continuation phase. Where clinically appropriate, the full 4 months of continuation phase TB treatment should be provided. At the completion of treatment, patients should return for an exit clinical consultation.

For patients already on DS-TB treatment in the intensive phase, at their next visit, patients should receive the remainder of their intensive phase TB treatment. Those with a positive TB smear at diagnosis should receive labelled specimen jars with instructions to return sputum samples 1 week prior to the scheduled Week 8 clinical assessment visit. At the Week 8 visit, patients with no clinically significant deterioration and in whom smear conversion has occurred (if applicable) should be switched to the continuation phase and receive sufficient TB medications for the remaining 4 months of treatment. Those with a positive smear at diagnosis should again receive specimen jars with instructions to return sputum samples in the month prior to treatment completion. On completion of TB treatment, all patients should have a clinical assessment consultation at the health facility.

Where a patient is clinically deteriorating at the Week 8 visit, or sputum smear conversion has not yet occurred, TB culture and drug susceptibility testing (DST) should be requested. The patient should receive another 4 weeks of intensive phase TB treatment, return to the health facility at Week 12 for clinical review, and receive specimen jars to return with sputum samples for repeat smear analysis prior to the next appointment. Clinicians must recall patients if drug resistance is detected.

Patients already on DS-TB treatment in the continuation phase should be given sufficient TB medication to last until completion of the continuation phase. Those who had a positive smear at diagnosis should receive labelled specimen jars to drop sputum samples in the month prior to treatment completion as described above to allow for final assessment and treatment outcome in line with national policies.

HIV co-infected patients who are not on antiretroviral therapy (ART) should be started on ART on the same day as TB treatment, with ART and TB prescriptions aligned (i.e., 2 months intensive phase TB treatment and 2 months ART supply). Patients with CD4 count <100 cells/mm^3 should receive

Table Additional areas of consideration for TB service provision during the COVID-19 pandemic

Area of consideration	Adaptation to service delivery
Patient support and telephonic monitoring interventions	All TB patients who have not identified a treatment supporter in the home should be encouraged to do so. Home support will be critical during time of less frequent interactions with healthcare workers and periods of lockdown
	Where resources allow, telephonic clinical follow-up and counselling can be provided at the same frequency (more if indicated) as health facility visits mandated in existing national guidelines
Contact identification and management	Contact identification should continue to be conducted at the diagnosis/treatment start visit
	Patients should be advised to inform all their identified contacts of their TB diagnosis and the importance of informing any healthcare worker of their contact with a known TB case should they present at a health facility during the COVID-19 pandemic; where possible, contact notification slips can be provided for TB contacts to present if they go to a health facility with symptoms
	At the clinical assessment exit visit, the clinician should enquire after the health of the contacts identified at treatment initiation and, if the COVID-19 pandemic is over, initiate appropriate contact management procedures
Provision for children, pregnant and breastfeeding women	Same management as proposed above
	All attempts should be made to communicate and consolidate the number of clinical visits to different healthcare facilities for various indications (e.g., antenatal, TB and HIV follow-up appointments)
Provision of the influenza vaccine	TB patients should not be recalled to the facility specifically for the influenza vaccine
	An influenza vaccine should only be provided if available in the clinician's consulting room during a clinical assessment visit
Differentiating TB from COVID-19	TB patients and patients with high risk of TB disease (e.g., close contacts) must be screened for COVID-19 at arrival at health facilities as they may be co-infected
	Patients who present with a cough of $\geq$2 weeks are less likely to screen positive for COVID-19 given the duration of cough; they should be provided with a mask and proceed directly to TB services for immediate TB screening

TB = tuberculosis.

prednisone for 4 weeks (40 mg/day for 2 weeks, then 20 mg/day for 2 weeks).[2]

Clinicians should telephonically recall those with urgent results (e.g., positive serum cryptococcal antigen test, TB drug resistance, etc.). Adherence counselling remains vitally important, particularly considering the limited in-person interactions with health care workers. The first counselling sessions should ideally be provided telephonically or near the health facilities where infection control measures are in place.

Care for DR-TB patients

DR-TB patients should be provided with DR-TB treatment refills to align with scheduled clinical visits at the health facility (Weeks 2, 4 and 8, and 2-monthly thereafter). Patients already on or starting an all-oral (injectable-free) DR-TB regimen and on linezolid require intensive monitoring of their haemoglobin (Hb) levels in the first 2 months of treatment,[3] including Hb checks at Weeks 2, 4 and 8, and should receive treatment to align with this schedule. Clinicians should telephonically recall any patients with clinically significant myelosuppression and either modify treatment or monitor at least monthly (consider a rapid fingerprick Hb) while on linezolid. After 2 months, irrespective of DR-TB regimen, patients should receive 2-monthly treatment refills and clinical consultations with electrocardiograms (ECG) and Hb monitoring. Clinical consultations at Week 8, Month 4 and Month 6 are particularly important to assess treatment effectiveness, follow up on sputum culture results, make treatment modifications and monitor ECGs for patients receiving QT-prolonging drugs. Patients on DR-TB treatment need to give sputum samples every month until confirmed sputum culture conversion. Thereafter, 2-monthly samples are sufficient. At each 2-monthly visit, patients should be given labelled specimen jars to return with sputum between the 2-monthly clinical assessment visits. As noted above, telephonic adherence counselling remains critical. Patients on an injectable-containing DR-TB regimen should be urgently transitioned to an oral regimen as recommended by the World Health Organization (WHO). Returning 5–6 times a week during the COVID-19 pandemic for injectable treatment is ill-advised.

Care for patients who are unwell

All unwell patients should first contact the health facility by telephone, including those with TB. Where it is necessary to go to the health facility, guidance on infection control and COVID-19 screening procedures on arrival should be discussed with the patient in advance. Other areas of consideration are outlined in the accompanying Table.

CONCLUSION

Continued TB diagnosis and management remains critical during the COVID-19 epidemic. While we

have focused on TB service provision for those patients on treatment, it is worth noting that patients with mild/moderate symptoms of COVID are currently being asked to self-isolate at home. However, these symptoms overlap with those of TB and it is important that such patients are investigated for TB if appropriate. We urge the TB community to act quickly to adapt and strengthen TB service provision to maximise the health and safety of our vulnerable TB patients and TB health-care workers during these unprecedented times.

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New diseases and old threats: lessons from tuberculosis for the COVID-19 response

Dear Editor,

Since December 2019 when the first case of infection with a novel coronavirus (SARS-CoV-2) was notified in Wuhan (China),[1] more than 120 000 people (in more than 100 countries) have been reported to have the disease (COVID-19) with more than 4000 deaths. The World Health Organization (WHO) announced COVID-19 as a pandemic on 11 March 2020. In countries with high rates of imported disease and local transmission, governments and communities have been mobilised to contain or delay the further spread of SARS-CoV-2, and to mitigate the impact of COVID-19 on populations, health systems, and national and global economies. Moreover, COVID-19 is also expected to affect the vulnerable population groups (e.g., elderly, prison inmates, and immuno-compromised individuals, such as people living with HIV) and also those affected by other diseases such as tuberculosis (TB).

In contrast to COVID-19, TB is an ancient infection known to affect humanity for at least 70 000 years,[2] and was declared a global health emergency by the WHO in 1993. An estimated 10 million people suffer from TB, and there are more than 1.2 million deaths per year.[3] Both *Mycobacterium tuberculosis* and SARS-CoV-2 attack primarily the lungs and interfere with host immunity (Table). Although both biological agents transmit mainly via close contacts, the incubation period from exposure to disease in TB is longer, with often a slow onset. *M. tuberculosis* is primarily transmitted through droplet nuclei of aerosols generated by people with TB, who may be infectious for months to years before effective treatment is commenced.[4] SARS-CoV-2 has an incubation period of a few days and can be spread via droplets and fomites,[5,6] although a recent study shows aerosols may also play a role.[7] Both diseases can cause mild or severe forms of disease, including symptoms such as dry cough, fever and shortness of breath.

Complementary COVID-19 and TB responses can assist in curbing both epidemics to save lives. Both diseases can utilise the capacity building efforts, along with surveillance and monitoring systems and robust programmes and infrastructures that have been developed over many years of investment by national authorities and donors (e.g., The Global Fund and USAID among others), as well as use of diagnostic tools such as GeneXpert and chest radiography. SARS-CoV-2 testing was initially focused on those with a history of travel to affected areas. However, in countries with local transmission, similar to TB, the case-finding strategies are being modified to an active approach, including the testing of patients with severe pneumonia that does not respond to antibiotics, and of symptomatic individuals and their close contacts.

Many practices in the TB response, such as triaging in the health centre setting, cough etiquette, contact tracing in the community, infection control in health centres and the community including isolation, would benefit the COVID-19 response. In many settings, the TB response, which includes community volunteers, may be activated for awareness raising, prevention and early notification in COVID-19. Although