Perspective

Mitigating the impact of the COVID-19 pandemic on progress towards ending tuberculosis in the WHO South-East Asia Region

Vineet Bhatia, Partha Pratim Mandal, Srinath Satyanarayana, Tjandra Yoga Aditama, Mukta Sharma

Department of Communicable Diseases, World Health Organization Regional Office for South-East Asia, New Delhi, India

Correspondence to: Dr Vineet Bhatia (bhatiav@who.int)

Abstract

Almost half of the deaths worldwide caused by tuberculosis in 2018 occurred in the World Health Organization (WHO) South-East Asia Region, home to around a quarter of the global population. Maintaining robust progress in this region is therefore essential if the global goal of ending the tuberculosis epidemic is to be realized. Substantial gains have been made in the region, but the threat to health worldwide posed by the coronavirus disease 2019 (COVID-19) pandemic includes not only the direct effects of the pandemic but also the potential eclipsing of the global tuberculosis emergency. The results of modelling studies present stark warnings of a reversal of years of progress and a significant resurgence in deaths from tuberculosis. The COVID-19 pandemic has had variable impacts in the WHO South-East Asia Region to date, but in the countries most affected there has been targeted diversion and repurposing of tuberculosis services, health-care workers and diagnostic equipment. The combined effects of COVID-19, containment measures and fragmentation of tuberculosis services have resulted in delays in diagnosis or non-diagnosis and disruption in treatment resulting in increased morbidity, mortality, transmission and drug resistance. Countries of the region have made attempts to ensure continuity of services and civil society and nongovernmental organizations have instituted a range of innovative mechanisms to support national programmes. However, a comprehensive approach – including scaling up successful initiatives, empowering community leadership, harnessing digital tools, and implementing easily accessible cash transfers and nutrition support – will be critical to success. As COVID-19 recedes, countries will need “catch-up plans” to deploy supplementary measures to address the increased tuberculosis burden. Urgent, targeted and agile responses have the potential to mitigate and reverse the impact of the COVID-19 pandemic on tuberculosis in South-East Asia.

Keywords: COVID-19, health services, South-East Asia, treatment, tuberculosis

Tuberculosis burden in the WHO South-East Asia Region and progress towards ending tuberculosis

The World Health Organization (WHO) South-East Asia Region, with only 26% of the global population, accounted for 44% of the global tuberculosis incidence in 2018. Tuberculosis killed around 650 000 people (or 1800 a day) in 2018 in the WHO South-East Asia Region, which was almost half of global tuberculosis deaths. In 2017, drug-sensitive forms of the disease also caused a loss of more than 8 million disability-adjusted life years among the most economically productive age group (15–49 years) in the region, the highest such figure for any communicable disease. Six countries of the region (Bangladesh, the Democratic People’s Republic of Korea, India, Indonesia, Myanmar and Thailand) are among the 30 countries globally with the highest tuberculosis burdens.

The region has made substantial progress towards ending tuberculosis in recent years, with a 20% increase in treatment coverage since 2015, which has led to the number of cases notified increasing from 2.66 million in 2015 to 3.36 million in 2018. The region needs to continue to build on this momentum and honour the commitments made during the United Nations High-Level Meeting (UNHLM) on the fight against tuberculosis in September 2018 to accelerate progress towards the targets of the 2030 Agenda for Sustainable Development and the WHO End TB Strategy. The Strategy aims to reduce tuberculosis deaths by 95%, reduce new cases by 90% between 2015 and 2035, and ensure that no family is burdened with catastrophic expenses from tuberculosis from 2020 onwards. Some of the targets for the WHO South-East Asia Region established
following the UNHLM commitments are to successfully treat at least 18 million people with tuberculosis, including at least half a million people with drug-resistant tuberculosis, between 2018 and 2022, and to provide preventive treatment to 11 million people from at-risk populations.7

With a high proportion of the world’s tuberculosis burden, the WHO South-East Asia Region determines global progress towards ending tuberculosis. Therefore, any loss of the current momentum would seriously threaten the region’s and the world’s progress towards achieving the goals. The coronavirus disease 2019 (COVID-19) pandemic poses a significant threat to health worldwide not only directly but also by eclipsing the global health emergency of tuberculosis.8 This perspective paper assesses the effects of the early stages of the pandemic on progress towards ending tuberculosis in the WHO South-East Asia Region. Since full data on the impact are not yet available, the unrefereed information provided reflects reports that the authors have received from patients’ groups, civil society organizations (CSOs) and nongovernmental organizations (NGOs), and WHO country offices in the region, through formal and informal communications.

Impact of the COVID-19 pandemic on tuberculosis services

The COVID-19 pandemic has had variable impacts in the region so far, with India, Bangladesh and Indonesia being worst affected in decreasing sequence.9 Accordingly, the countries of the region have taken steps to contain the spread of the disease. Both the fear among people of contracting COVID-19 at crowded health centres and the containment measures taken by governments have led to a change in health-seeking behaviour as well as reduced access to and availability of health services in general. Among the countries with high tuberculosis burdens, the containment measures vary, including strict lockdown in India, restrictions being imposed in Bangladesh, mainly social distancing measures in Indonesia and an emphasis on infection control measures in Myanmar and Thailand.

The containment measures have induced disruption in transport services, and the restriction of health facilities to management of emergency medical conditions is impairing access to and delivery of tuberculosis diagnosis and treatment services. This is primarily because symptomatic people cannot reach health facilities or because cessation of outreach activities means that sputum samples cannot be transported from the field. For similar reasons, it is difficult for patients on treatment to attend a health facility to be monitored through sputum examination. In June 2020, the Global Fund reported that nearly 80% of the tuberculosis programmes it supports globally have experienced disruption in service delivery, with 17% of them reporting high or very high disruption.10 In some countries of the region with high tuberculosis burdens, such as Bangladesh, India and Indonesia, a significant proportion of patients with tuberculosis are notified by private sector health facilities.1 Based on information provided by patients’ groups, the current COVID-19 outbreak has seen a scaling down of medical services provided by the private sector, and therefore tuberculosis case notification has decreased in this sector as well. According to the early data available from Nikshay, India’s online reporting portal with public access, between 1 January and 30 June 2019 nearly 895 000 and 355 000 cases were notified in the public and private sectors, respectively. For the same date range in 2020, the numbers of public and private sector notifications were about 670 000 and 250 000.11

Tuberculosis programmes have contributed significantly to the COVID-19 response, as both diseases present with respiratory symptoms, and similar infrastructure, skills and expertise are needed for containment, diagnosis and management. Therefore, diversion and reprioritization from tuberculosis programmes to the COVID-19 response has been common. In Bangladesh, India, Indonesia and Nepal, health systems structures and health-care workers have been repurposed for or diverted to the COVID-19 response. This effect on tuberculosis service provision is compounded by the fact that health systems in low- and middle-income countries are already under-resourced.

Tuberculosis diagnostic test platforms such as GeneXpert® (Cepheid, United States of America) and TrueNat® (Molbio Diagnostics, India) can also be used to detect the COVID-19 causal agent, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and their likely diversion to COVID-19 diagnosis may also result in fewer tuberculosis diagnoses and missed opportunities for early detection of drug resistance. According to reports available at the end of May 2020, Bangladesh, India, Myanmar and Thailand had either repurposed a proportion of their equipment or were in the process of doing so while awaiting the cartridges for tests. In Bhutan, India and Indonesia, drug-resistant tuberculosis isolation wards and hospitals that have respiratory isolation facilities are now being reprioritized to treat patients with COVID-19. This could mean fewer patients with drug-resistant tuberculosis starting treatment under appropriate conditions. So far, based on interim tuberculosis notification data available online, reductions of more than 50% in case notification have been recorded in some countries of the region. It is also anticipated that especially vulnerable populations, including migrants, transgender people, elderly people and children, will bear the brunt of the situation resulting from the diversion of qualified staff, further restricted access to health services, and repurposing of the diagnostic and treatment infrastructures for the COVID-19 response. This is also relevant for children in countries of the WHO South-East Asia Region, where the paediatric tuberculosis diagnosis is already low and, as in other low- and middle-income countries, the majority of patients are not seen by dedicated paediatric specialists. Many general physicians and nurses usually available for children’s care will be seconded to dealing with adult patients affected by COVID-19 instead.8

Although investigations of the possible interactions between tuberculosis and COVID-19 are in their infancy, it is reasonable to assume that the diseases may amplify each other if not addressed simultaneously. An observational study conducted in China found that tuberculosis infection and disease may increase susceptibility to SARS-CoV-2 and increase COVID-19 severity.12 The WHO South-East Asia Region has low coverage of tuberculosis preventive treatment: only 15% of people living with HIV newly enrolled in care and 26% of children aged 5 years or younger who were household contacts of people with confirmed tuberculosis received tuberculosis preventive treatment in 2018.1 With outreach activities either stopped
or downscaled, the administration of tuberculosis preventive treatment may be among the most impacted activities that could be useful in preventing the emergence of tuberculosis cases that will be worst affected.

At a much broader level, COVID-19 containment measures have led to loss of earnings specifically for daily wage earners, amplifying poverty and undernutrition. Tuberculosis thrives on poverty. Undernutrition accounted for an estimated 2.3 million cases of tuberculosis globally in 2018. Levels of undernutrition and poverty associated with tuberculosis are already high in the region, and the number of tuberculosis cases in the region will surge with increased poverty and undernutrition.

The net effect of disruption to tuberculosis services will result in delay in diagnosis or non-diagnosis of tuberculosis and in disruption to treatment causing increased morbidity, mortality, transmission of tuberculosis and drug resistance levels. In fact, the results of a mathematical modelling study coordinated by the Stop TB Partnership indicate that a 3-month lockdown plus the results of a 10-month period of gradual restoration of services could see the global tuberculosis incidence and mortality rates resurging the levels seen during 2013–2016 – in other words, in the loss of the progress made in the past 5 to 8 years. The authors of the report also emphasize that any excess tuberculosis burden that is allowed to accumulate during the COVID-19 response could hinder tuberculosis control efforts for at least the next 5 years.

The results of a separate modelling analysis indicate that, if global tuberculosis case detection decreases by an average of 25% over a period of 3 months, an additional 190,000 tuberculosis deaths will occur. Given that the WHO South-East Asia Region accounts for over half of global tuberculosis mortality, even at this minimum level of disruption in tuberculosis case detection an additional 100,000 tuberculosis deaths will occur in 1 year. If case detection drops by 50% over a period of 3 months, the number of tuberculosis deaths could increase by nearly 1 million in the region.

**Preserving progress and mitigating risks to delivery of high-coverage tuberculosis services in the region**

While some disruption to tuberculosis services and consequent decreased access is inevitable, it is important that all countries minimize the impact by providing a basic minimum services package for tuberculosis patients during the COVID-19 outbreak period and that they facilitate access by improving outreach and ensuring that health services have proper infection control measures in place to boost confidence. National tuberculosis programmes will also need to plan for catch-up after the COVID-19 situation normalizes.

So far, countries of the region have made attempts to ensure continuity of tuberculosis services and have issued guidance on carrying out various related activities during the COVID-19 outbreak. Innovative mechanisms are being adopted to ensure continuity of treatment. In some countries, telephone helplines have been established for patients with tuberculosis. In Sri Lanka, patients with tuberculosis treatment cards can use the card as a “pass” to travel through lockdown areas to access health services. During a webinar organized by the WHO Regional Office for South-East Asia, CSOs and NGOs in the region reported the use of various innovative mechanisms to support national programmes (Box 1). The efforts made by programmes and partners are commendable. However, far more needs to be done to ensure that the region with the highest tuberculosis burden continues its progress towards ending tuberculosis. The successful pilot schemes and focused efforts need to be scaled up. A comprehensive approach will be required to strengthen the connection between communities and health services. Community systems must be put in place to ensure rapid screening for people in the community with symptoms such as cough and fever. COVID-19 and tuberculosis may present with similar symptoms, albeit with different durations, and dual screening with universal precautions to address both diseases is going to be critical. Integration of diagnostic processes may help with identification of missing cases of tuberculosis as well as COVID-19. Sputum smear microscopy remains the cornerstone of tuberculosis diagnosis among symptomatic patients and some early evidence indicates that use of sputum, specifically induced sputum, may be a more sensitive method of diagnosing SARS-CoV-2 infection. The path to diagnosis may be stressful physically and mentally for those with symptoms, who may

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**Box 1. Examples of civil society activities to support national programmes in the region**

- Various CSOs are mapping patients and available tuberculosis services to help establish contact between patients and health facilities.
- Partners in Jakarta, Indonesia, have ensured that patients with multidrug-resistant tuberculosis can stay connected with services by distributing smart phones.
- Some CSOs have been able to arrange social support for patients with tuberculosis on treatment directly or by connecting them with relevant departments.
- Innovative mechanisms are being used at tuberculosis clinics run by Médecins Sans Frontières, India, to prevent infection transmission, adopt social distancing measures and arrange COVID-19 tests for patients who may be infected. These clinics have established collaborations with other institutes to provide counselling services.
- Teleconsultation for patients on treatment specifically to monitor treatment and identify any adverse events early is being provided by several clinics run by NGOs.
- The international development organization BRAC, Bangladesh, is arranging sputum transportation for diagnosis and monitoring while ensuring proper disinfection of sputum collection places.
- World Vision, Thailand, has been working with vulnerable groups including migrants; the package of services provided includes information dissemination and linking people to health services.
- Save the Children, Nepal, is working with partners to ensure continuity of tuberculosis services, both preventive services and treatment, and monitoring status on a monthly basis. Save the Children has also developed a plan for catch-up in the post-COVID period and enhanced outreach activity.
be apprehensive about being diagnosed with either of the diseases because of the similarities in presentation. Guidance and counselling for those in need of diagnosis are necessary so that people with symptoms are reassured about the diagnosis made and approach treatment accordingly. Community volunteers can support referral to health facilities for those in need of diagnostic or treatment services. Both tuberculosis and COVID-19 are stigmatized conditions, and avoiding loss of confidentiality and preventing discrimination are important considerations when planning such services for both diseases.

Digital tools such as teleconsultation (and treatment), smart pill boxes and social platforms could also be of help in contacting patients and providing quality care.\(^1\) Digital tools not only help to maintain physical distance, thus preventing transmission, but also provide easy access to health services at a time convenient to the patient. Connectivity among patients and care providers will build confidence in the health system and enable patients’ urgent needs to be addressed as and when needed. Some patients may face adverse events during treatment. These can also be suitably monitored and addressed to a large extent if people are connected with health-care providers through digital platforms. Pill boxes will support patients in regular medicine consumption. The potential for improving tuberculosis care through digital technology is still largely untapped. The COVID-19 pandemic has compelled many sectors to shift rapidly to digital solutions; this should be a catalyst for tuberculosis services to exploit these resources.

To decrease the susceptibility of people with tuberculosis to COVID-19, it is important that preventive tuberculosis treatment is continued even during the COVID-19 outbreak and scaled up considerably once the outbreak is over. Plans for household contact investigations for tuberculosis patients will need to be scaled up.

To minimize the impact of poverty and malnutrition, patient support systems such as cash transfer and nutrition support schemes, which are already part of national tuberculosis programmes, need to be streamlined and made more efficient by identifying and removing any bureaucratic hurdles, which might include, for example, multiple steps required to receive such support. It is reported that streamlining direct benefit transfers through single transfer accounts is being trialled in India.

The WHO Regional Office for South-East Asia has been supporting the region through cross-country learning activities, by sharing literature, guidelines and policy documents, including on continuity of tuberculosis services during the COVID-19 pandemic. The regional office has conducted and facilitated several webinars to build capacity in countries of the region including Bangladesh, Indonesia, Myanmar, Nepal, Sri Lanka and Timor-Leste, with plans for similar activities for other countries of the region. The regional office has also supported countries in developing or updating their national strategic plans for ending tuberculosis, as well as in submitting ambitious proposals to the Global Fund for support for tuberculosis programmes in the region. Remote support through web platforms is likely to continue for several months.

Once the COVID-19 pandemic recedes, the pace of restoration of tuberculosis services will also have a significant bearing on the tuberculosis burden for the next 5 years or so. Supplementary measures will be required to reduce the accumulated pool of tuberculosis cases. Intensifying case finding through community-based outreach activities with a special focus on marginalized and vulnerable groups on a much larger scale may be needed. Each country will have to assess the magnitude of the negative impact and develop appropriate catch-up plans to recover lost ground. To support these catch-up efforts, funding agencies such as the Global Fund might consider “front-loading” some of their grants for tuberculosis programmes. Health systems strengthening will also need a greater focus to create systems that will be sustainable in the long term. Lessons learnt from COVID-19, specifically regarding contact investigations and infection control, will be important for ending tuberculosis and need to be continuously implemented. The catch-up phase will also provide greater opportunities for south–south collaboration through commodity support and technology transfer.

Countries of the region are manufacturers of innovative technology and suppliers of drugs. The availability of cheap technology and commodities will offset some of the costs of the additional investments required and of accelerating the expansion of services. Diversification of sources of funding will be essential, especially for those countries with a heavy tuberculosis burden, although the Global Fund remains the largest international funder of tuberculosis control activities. According to modelling estimates, the existing funding gap for ending tuberculosis in the region is close to US$ 1 billion per year.\(^1\) This gap and the additional funds that may be needed could be filled through increased domestic commitments, private sector engagement and innovative funding mechanisms drawing inspiration from successful mechanisms such as GAVI, the Vaccine Alliance, and UNITAID. Social impact bonds, which have been implemented in countries such as the United Kingdom of Great Britain and Northern Ireland and the United States of America, could also be tried in the region as innovative financing mechanisms.

The impact of the COVID-19 pandemic on progress towards ending tuberculosis in the WHO South-East Asia Region may be substantial in the short to medium term if not urgently addressed. However, with resolute action by countries of the region, including a quick assessment of the impact of COVID-19 on tuberculosis programmes, careful planning and prioritization, and ensuring the delivery of quality services, the impact on tuberculosis burden can be minimized and even reversed.

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