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## RESEARCH ARTICLE

### Call for Integration of Screening of Other Respiratory Diseases of Epidemic Potential in Traditional TB Clinics

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#### ABSTRACT

**Introduction:** Medical advances in the last six decades have made tuberculosis (TB) a curable disease. We conducted a Systematic Literature Review to examine the potential impact of the COVID-19 pandemic on TB programmes.

**Methods:** We conducted a Systematic Literature Review to examine the potential impact of the COVID-19 pandemic on TB programmes. We searched online publication databases and World Health Organisation publications on the interaction of TB and COVID-19 pandemic.

**Results:** Our survey shows that during the period of the pandemic the world saw reversal of gains following the disruption of TB programmes. This was due to applied lockdowns and reduced financing to the programmes. During the years of the pandemic (2020 to 2021) both diseases killed comparably close to 1.5 million people each. Justifiably, priority was given to dealing with the COVID-19 pandemic whose epidemiology was poorly understood. Global funding to TB control reduced while a record level of global resources ever to be allocated to one disease in a space of two years was amassed to fighting the COVID-19 pandemic.

**Conclusion:** Available evidence in literature show considerable disruption of well-running TB programmes when the world was affected by the pandemic. To avoid repeating similar mistakes when the world experiences another COVID-like pandemic we strongly advocate for integrating TB and Severe Acute Respiratory Syndrome-related Coronaviruses (SARSr-CoV) control programmes. This is justifiable from many reasons including the observations that both diseases 1) affect the lungs and can worsen the treatment outcomes of each other, 2) are biggest killers among unvaccinated individuals, 3) carry a similarly high very level of stigma within communities, and 4) need adequate funding to control. In addition, SARSr-CoV prevention and control can benefit from longstanding structures and patient management methods that have been built to fight TB and vice versa.

## Introduction

Effective tuberculosis (TB) treatment has been available for the past 60 years.<sup>1</sup> But TB remains the leading cause of death from a single infectious agent.<sup>2, 3</sup> It ranks above HIV and AIDS and others. This is partly because of the impact of HIV co-infection among TB patients in places like Africa<sup>4</sup> and emergency of MDR-XDR TB.<sup>5</sup> Lack of both gender mainstreaming and reduction of stigma manifested by persistently lower reported cases among women than men is of continued concern. One study found that over half of pregnant women either had not knowledge of TB or half of them had stigmatizing attitude against TB.<sup>6</sup> The impact of TB programmes is currently facing constant threats due to epidemics and changing geopolitical situation. The COVID-19 pandemic is one of the threats TB programmes recently faced but its full negative impact is not fully understood. We outline some of

these impacts and recommend some restructuring to global TB control.

## Methods

We conducted a Systematic Literature Review to examine the potential impact of the COVID-19 pandemic on TB programmes. We searched online publication databases and World Health Organisation publications on the interaction of TB and COVID-19 pandemic.

## Results

COVID-19 surpassed TB as a killer over the past two years.<sup>7</sup> The number of people dying from TB have been going down since 2005.<sup>2</sup> But now TB is again at number one. Between 2019 and 2021 the number of people provided with treatment for TB decreased – largely due to COVID-related lockdowns.<sup>2</sup> In 2021, 61% of people with TB were receiving treatment, this is lower than 69% in 2020.

### Estimated TB incidence rates, 2021



Source: [World Health Organization](#)

## What went wrong?

While progress in TB elimination was being made the COVID-19 pandemic and associated lockdowns set back TB control programmes worldwide.<sup>9</sup> More so in Africa. While COVID-19 prevention measures like mask-wearing could have prevented TB transmission, on the whole, little attention was given to holding the forts of TB prevention and treatment as all efforts went to fighting the COVID-19 pandemic, disrupting well-functioning programmes built over decades of careful research and

planning. This disruption has resulted in the following:

### a) Increased TB cases:

In 2021, there were 10.6 million new active TB cases<sup>2</sup> worldwide: up from 9.9 million in 2020. These increases have been in both drug sensitive and multi-drug resistant TB cases.

b) *Increased TB deaths:*

In 2021 there were an estimated 1.6 million deaths from TB worldwide: up from 1.5 million in 2020 and 1.4 million in 2019. This is a reversal of years of decline before the COVID-19 pandemic. A quarter (25%) of TB related deaths occur in the African region which has around 16% of world's population.<sup>10</sup> HIV being a main contributing factor.

c) *Decline in TB global spending during and after COVID-19 pandemic:*

Global spending on essential TB services dropped from US\$6.0 billion in 2019 to US\$5.4 billion in 2021. This is less than half of what is needed. The war in Ukraine has compounded this extended decline in TB prevention and control. Even before the Russian invasion, Ukraine had a high TB rate.<sup>11</sup> The war has exacerbated the situation with health facilities being destroyed and people displaced. African TB control programmes that rely on aid and Global Fund support have been affected most.

**Call for regaining lost ground: integrating TB and COVID-like illness pandemic services**

Following the findings of our review we motivate for integrating screening of respiratory diseases of epidemic potential in traditional parallel programmes of TB control. Both TB and COVID-19 are respiratory diseases. There is some scientific evidence that show that integrating TB and Severe Acute Respiratory Syndrome-related Coronaviruses (SARSr-CoV) control programmes can be beneficial. Immunological evidence suggest that a dual risk posed by co-infection worsening COVID-19 severity and favouring TB disease progression.<sup>8</sup> Use of face masks against COVID-19 infection could also have prevented many TB infections in the community.

Intensified efforts to obtain funding are urgently required to mitigate and reverse the negative impacts of the COVID-19 pandemic on TB, by doing so also integrate screening of respiratory viral diseases of epidemic potential within the SARSr-CoV group. This has become even more pressing in the context of ongoing conflicts in Africa and other parts of the world, which are likely to worsen some of the broader determinants of TB<sup>2</sup> such as undernutrition. To maximise the impact of integration targets for fighting SARSr-CoV should integrate the TB control target into one framework and algorithms that guide health workers. The first End TB Strategy milestones for reductions in TB disease should guide what needs to be done for TB control. This includes 20% reduction in 2015 TB incidence rates, and 35% reduction in total number of TB deaths benchmarked in 2015. Three high TB

burden countries in Africa have reached or passed the first milestones of the End TB Strategy for both reductions in TB incidence and TB deaths: Kenya (in 2018), Tanzania (in 2019) and Zambia (in 2021). Ethiopia is very close. However, the larger part of the African continent has seen a reversal in gains made. Nonetheless development of targets for SARSr-CoV and other respiratory diseases of epidemic potential will add to simplifying the process of integration. Priorities for integrated TB and SARSr-CoV care should be:

1. Increasing budget and human resources for existing services of both diseases
2. Developing digital platforms for training and health education. Developing public-facing dashboards for TB surveillance data. Develop telemedicine with the use of digital platforms for consultation. Reduce loss to follow up for both diseases.
3. Strengthen community-based TB and SARSr-CoV disease treatment services.
4. Scale up virtual care, community-monitoring solutions to provide remote support such as video-supported therapy. Scaling up SMS-based communication to improve treatment, screening, adherence and patient-centred care and support for both diseases.

Integrated TB and SARSr-CoV prevention should focus on:

- Targeting high-risk groups for universal testing, to find most or all missing active TB and SARSr-CoV cases in communities.
- Strengthening community-based active case finding of both diseases (including in shelters for people who are homeless).
- Enhancing screening and case finding activities at health facilities, including targeting high-risk groups
- Increasing screening for both diseases in high-risk groups through use of rapid molecular tests with high sensitivity and specificity for dual diagnostic testing for TB and SARSr-CoV
- Ensure regular supply of diagnostics, drugs and vaccines through local manufacturing in endemic areas.

**Conclusion**

World literature reports we reviewed show that since the advent of the COVID-19 pandemic many lessons have been experienced which should lead to avoidance of a repeated reversal of the gains of one programme at the expense of the other. No death from one particular disease is more important

than that from a different one. Integrating TB and SARS-CoV services is justifiable from many reasons including the observation that both diseases 1) affect the lungs and can worsen the treatment outcomes of either, 2) are biggest killers among unvaccinated individuals, 3) carry a similarly high very level of stigma within communities, and 4) need adequate funding to control. In addition, SARS-CoV prevention and control can benefit from longstanding structures and methods of patient management that have built to fight TB and vice versa.

**Authors statement on originality of information in this article**

Some of statements originate from article of how TB burden matched that of COVID-19 was published

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**Conflict of interest**

No author is conflicted. Youth with Talents is a group of volunteer students visiting Malawi annually for orientation to infectious diseases control and health care in low-middle income countries.

**Ethics approval**

Not required.

## References

1. Barry R Bloom, Rifat Atun, Ted Cohen, Christopher Dye, Hamish Fraser, Gabriela B Gomez, Gwen knight, Megan Murray, Edward Nardell, Eric, Rubin, Joshua Salomon, Anna Vassall, Grigory Volchenkov, Richard White, Douglas Wilson, Prashant Yadav, King K Holmes, Stefano Bertozzi, Barry R Bloom, Prabhat Jha. Tuberculosis. In: Major Infectious Diseases. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017 Nov 3. Chapter 11. DOI: 10.1596/978-1-4648-0524-0\_ch11
2. <https://who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2022/tb-disease-burden>
3. Anastasia Koch and Valerie Mizrahi . Mycobacterium tuberculosis. Trends Microbiol. 2018 Jun;26(6):555-556. doi: 10.1016/j.tim.2018.02.012. Epub 2018 Mar 23
4. Jeffrey A Tornheim, Kelly E Dooley. Challenges of TB and HIV co-treatment: updates and insights. Curr Opin HIV AIDS. 2018 Nov; 13(6): 486-491. doi:10.1097/COH.0000000000000495.
5. Kwonjune J Seung, Salmaan Keshavjee, Michael L Rich. Multidrug-Resistant Tuberculosis and Extensively Drug-Resistant Tuberculosis. Cold Spring Harb Perspect Med. 2015 Apr 27;5(9):a017863. doi: 10.1101/cshperspect.a017863.
6. S N Mehta, M Murrill, N Suryavanshi, R Bhosale, S Naik, N Patil, A Gupta, J Mathad, R Shivakoti, M Alexander. TB-related knowledge and stigma among pregnant women in low-resource settings. Int J Tuberc Lung Dis. 2021 Feb 1;25(2):148-150. doi: 10.5588/ijtld.20.0241.
7. World health organization, (2022, January 17). A report about Coronavirus. Retrieved from <https://covid19.who.int/>
8. D Visca, C W M Ong, S Tiberi, R Centis, L D'Ambrosio, B Chen, J Mueller, P Mueller, R Duarte, M Dalcolmo, G Sotgiu, G B Migliori, D Goletti. Tuberculosis and COVID-19 interaction: A review of biological, clinical and public health effects. Pulmonology. 2021 Mar-Apr;27(2):151-165. doi: 10.1016/j.pulmoe.2020.12.012. Epub 2021 Jan 22.
9. Mariana Marti, Kathrin Zürcher, Leslie A Enane, Lameck Diero, Olivier Marcy, Thierry Tiendrebeogo, Marcel Yotebieng, Christelle Twizere, Suwimon Khusuwan, Evy Yunihastuti, Gary Reubenson, N Sarita Shah, Matthias Egger, Marie Ballif, Lukas Fenner. leDEA global consortium. Impact of the COVID-19 pandemic on TB services at ART programmes in low- and middle-income countries: a multi-cohort survey. J Int AIDS Soc. 2022 Oct;25(10):e26018. doi: 10.1002/jia2.26018.
10. <https://w.worldometers.info/world-population/africa-population/#:~:text=The%20current%20population%20of%20Africa,of%20the%20total%20world%20population.>
11. <https://www.lshtm.ac.uk/research/centres/health-humanitarian-crises-centre/news/343596/will-war-ukraine-lead-spike-tuberculosis-cases.>