


Ethel Leonor Noia Maciel<sup>1</sup> -  [orcid.org/0000-0003-4826-3355](https://orcid.org/0000-0003-4826-3355)

Etereldes Gonçalves Júnior<sup>2</sup> -  [orcid.org/0000-0002-7035-1792](https://orcid.org/0000-0002-7035-1792)

Margareth Maria Pretti Dalcolmo<sup>3</sup> -  [orcid.org/0000-0002-6820-1082](https://orcid.org/0000-0002-6820-1082)

<sup>1</sup> Universidade Federal do Espírito Santo, Laboratório de Epidemiologia, Vitória, ES, Brazil

<sup>2</sup> Universidade Federal do Espírito Santo, Departamento de Matemática, Vitória, ES, Brazil

<sup>3</sup> Fundação Oswaldo Cruz, Escola Nacional de Saúde Pública Sergio Arouca, Rio de Janeiro, RJ, Brazil

As we celebrate World Tuberculosis (TB) Day on March 24<sup>th</sup> and as we draw close to the first milestone, in 2020, of the World Health Organization's (WHO) new tuberculosis control strategy, known as the End TB Strategy<sup>1</sup>, it is fitting to examine the dimensions of the TB situation in Brazil in times of the COVID-19 pandemic, the agent of which is coronavirus SARS-CoV-2.

COVID-19, detected for the first time in Wuhan, China, in December 2019, can cause viral pneumonia, the complications of which can lead to death. The convergence of the two diseases – TB and COVID-19 – appears to signal a pessimistic scenario. Although some developments have been implemented, such as rapid testing, fixed-dose combination drugs, the 300mg isoniazid tablet, among others, these have been insufficient for making progress with controlling TB. Moreover, TB is a neglected disease, with little encouragement for the industry and the government to invest in discovering new drugs or new methods of diagnosis, and now, in the face of the pandemic, it will take a heavy toll.

The risk factors associated with COVID-19 still require enlightenment. Nevertheless, it is plausible that infection by *M. tuberculosis* (MTB), the pathogen that causes TB and gives rise to latent infection in some 25% of the global population, may be a risk factor for SARS-CoV-2 infection and severe pneumonia due to COVID-19, as suggested in a study conducted in China. In that case-control study, MTB infection was more common than other comorbidities (36%, versus: diabetes, 25%; hypertension, 22%; coronary disease, 8%; and chronic obstructive pulmonary disease, 5%). When comparing the state of MTB infection among cases of pneumonia

caused by COVID-19 with slight to moderate severity and with severe to critical severity, MTB coinfection was found to be lower in the first group (22%) in comparison to the second (78%), with statistical difference between them ( $p=0.005$ ). These findings, although preliminary, point to the need to assess whether MTB infection is a risk factor COVID-19 and whether a causal relationship exists.<sup>4</sup>

Brazil will not meet the End TB Strategy targets of reducing TB mortality by 95% and TB incidence by 90% between 2015 and 2035. Indeed, a 2019 Ministry of Health publication on TB data reveals increased incidence of this condition in Brazil. If we take as an example the two states that have most contributed to the endemic in Brazil, since they have the highest TB incidence rates – Amazonas and Rio de Janeiro –, and look at the increase in diagnosis, we will find that in Amazonas, where diagnosis increased from 68.3% in the 2018 edition of the publication to 72.4% in the 2019 edition, incidence decreased from 74.1 to 72.9 cases per 100,000 inhabitants. In Rio de Janeiro, where percentage diagnosis remained unchanged (61.7% in both years), incidence increased from 63.5 to 66.3 cases per 100,000 inhab.<sup>2,3</sup>

The elevated occurrence of TB in the Brazilian states, along with high population density, especially in large cities, in a setting marked by underfunding of the Brazilian National Health System (SUS), comprise a scenario that allows difficulties in addressing COVID-19 to be foreseen.

A mathematical simulation produced by the Imperial College COVID-19 Response Team foresees that the single most efficacious measure for flattening the

#### Correspondence:

**Ethel Leonor Noia Maciel** - Universidade Federal do Espírito Santo, Programa de Pós-Graduação em Saúde Coletiva, Av. Marechal Campos, No. 1468, Bairro Bonfim, Vitória, ES, Brazil. Postcode: 29043-260  
Email: ethel.maciel@gmail.com

demand curve for critical hospital care in the COVID-19 epidemic in Great Britain is social distancing and home quarantine of elderly people aged over 70. This basically occurs because around 27% of the elderly in this age group are affected by COVID-19 and need hospital care.<sup>5</sup>

Considering preliminary results indicating that TB is an important comorbidity for worsening the clinical condition of COVID-19 cases, TB case

isolation can be an important measure for minimizing the occurrence of severe cases of COVID-19 and hospitalizations due to the disease in this population. Even in a situation of isolation, access to TB treatment must be ensured and must be regular. As such, even though studies are still at a preliminary stage, it is recommended that social distancing measures be targeted more clearly towards people infected by MTB.

## References

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