

The potential impact of the COVID-19 response on tuberculosis in high-burden countries: a modeling analysis

Objective: This modeling study had two aims: 1) to identify the potential impact of short-term COVID-19 lockdowns on TB incidence and mortality over the next five years in high-burden countries and 2) to identify how countries could best accelerate the restoration of TB control programs following COVID-19 lockdown.

Study design: The potential impacts of COVID-19 lockdown on TB were modeled based upon their anticipated disruption to key indicators of TB care. Negative indicators modeled included care-seeking delay, reduced diagnostic capacity for labs and healthcare providers, reduced treatment completion rate, reduced drug-susceptibility testing, reduced drug supply and disruption of HIV care. Reduction in transmission due to physical distancing was also modeled as a positive indicator. Two scenarios were modeled: a baseline scenario of a two-month lockdown followed by a two-month restoration period and a worst-case scenario of a three-month lockdown followed by a ten-month restoration period.

Study population: The modeling was based on three high-TB-burden settings with key differentiating features: India (high-burden, private sector involvement), the Republic of Kenya (high HIV comorbidity) and Ukraine (high proportion of drug-resistant TB, hospital-based care delivery). Estimates from these countries were extrapolated to create global impact estimates.

Results: The study predicted a significant increase in TB incidence and TB deaths in the three high-burden settings modeled (Figure 1). Through extrapolation of these results, the study found that a baseline COVID-lockdown scenario could result in an excess 1.8 million TB cases and 340,000 TB deaths globally, whereas a worst-case scenario could result in an increase of 6.3 million TB cases and 1.4 million TB deaths globally.

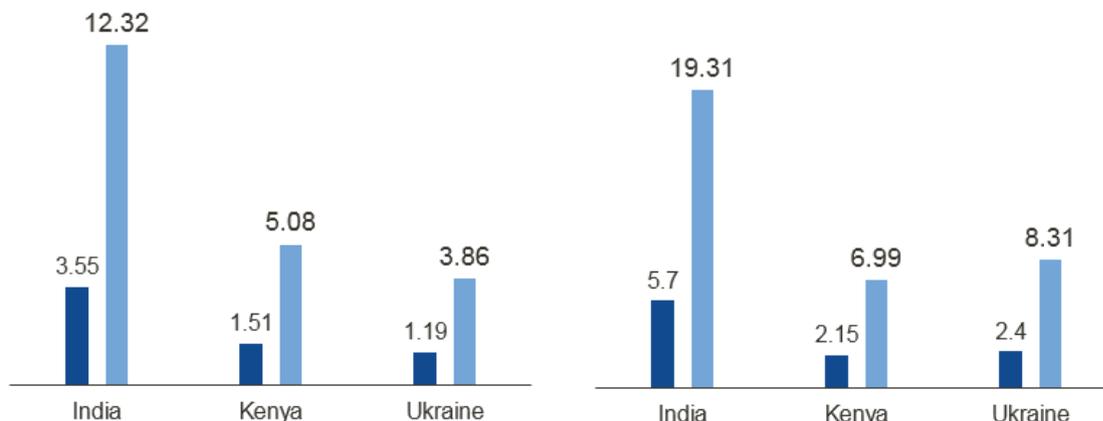


Figure 1. Excess TB cases and deaths 2020–2025. Percent increase in TB cases (left) or TB deaths (right) from 2020–2025 under baseline scenario (dark blue) and worst-case scenario (light blue) for three high-TB-burden settings.

The study found that during the lockdown period, reduced TB diagnosis and treatment caused a pool of undetected and unreported TB that continued to contribute to disease transmission in the years after COVID-19 interventions were lifted. The model showed that a rapid restoration of TB services was critical for minimizing these adverse impacts.

Author's conclusions:

- Stringent short-duration COVID-19 responses will have a lasting and substantial negative impact on TB control in high-burden settings, primarily through a reduction in TB diagnosis and treatment.
- Without mitigation, the COVID-19 epidemic is predicted to setback 5–8 years of progress in the global fight against TB.
- Mitigation of these impacts will require supplementary measures to reduce the accumulated pool of undetected people with TB, including ramped-up active case-finding, community engagement and contact tracing. Access to uninterrupted treatment and care will be essential.