

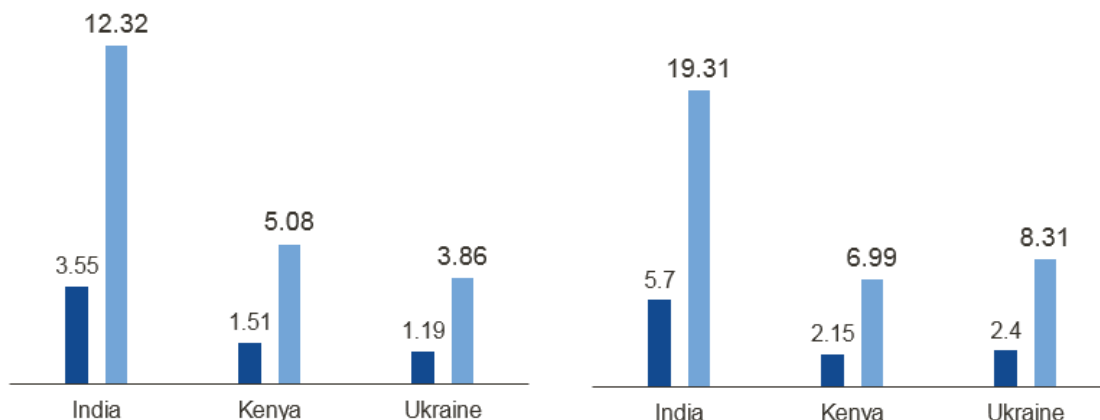
## The potential impact of the COVID-19 response on tuberculosis in high-burden countries: a modeling analysis

**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.

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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.