

Prisons as boosters of tuberculosis and drug resistance tuberculosis transmission in Latin America

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Imprisonment is an important but commonly forgotten social determinant of health and in the last decades, tuberculosis (TB) in prisons has been recognised as an important driver of the total burden of TB. Overcrowding, poor ventilation, malnutrition, lack of access to health care and comorbidities, among others, fuel this association. The population attributable fraction due to incarceration increased from 4.5 to 9.7% from 2011 to 2017¹ and a study in Georgia found that up to 31% of cases of multidrug-resistant (MDR) TB were related to prisons, pointing out that the incarceration environment can select MDR strains with increased fitness, more capable of spreading in general populations.²

In Central and South America, the situation is quickly deteriorating as the number of persons deprived of their liberty (PDL) is dramatically increasing, leading to occupancy of more than 200% in several countries³ and the incidence of TB in PDL is 26 times the observed in the general population, representing the highest ratio worldwide.⁴ This may be one of the explanations for the increase in MDR-TB reported cases in these regions.⁵ The impact of imprisonment on global TB epidemiology is difficult to estimate as the WHO World TB Report lacks information related to PDL. Understanding the burden and unrecognized determinants of TB in Latin American countries could help in developing actions to mitigate the impact in the region.

Sequera et al.⁶ addressed the excess tuberculosis risk during and following incarceration in Paraguay. They found that 15% of people develop TB during imprisonment. The number of prison entries, duration of incarceration, and overcrowding were the main risk factors for TB development. Younger PDL had the highest risk and were also the most renewed subpopulation. Remarkably, 42% of cases occurred after release. This high risk represents more than 30 times the risk in the general population, generating an important potential for community transmission. Implications for this common Latin-American scenario involve more intense screening efforts on those coming back to prison, young, those with longer condemns, and implementing an active screening beyond release. A related problem is the role of prisons as boosters of MDR TB transmission. Utpatel et al.⁷

identified prisons as one of the drivers of recent transmission of MDR TB. This cross-sectional study analysed 171 MDR strains using whole genome sequencing (WGS) from a high-incidence TB setting in Peru, a country with the highest number of MDR reported cases in the Americas. The study found that more than half of strains belong to clusters of recent transmission and current or previous imprisonment was associated with 45% more risk of being part of any MDR-TB transmission cluster. MDR strains that are also resistant to fluoroquinolones (known as pre extensively drug-resistant) emerged in more than 10% of strains and a particular concern was the identification of bedaquiline resistance even before the availability of the drug. The findings of the study add to the evidence that prisons are important drivers of the MDR-TB epidemic in TB-endemic areas.

Specific features of prisons and prisoners require specific approaches to TB control. Interventions should be directed at improving ventilation, avoiding overcrowding, assuring effective diagnosis based on timely and efficient screening, opportune treatment of sensitive and MDR cases, and follow-up of patients and ideally their contacts, including after prison discharge. Since 2021 WHO strongly recommends systematic screening for tuberculosis in prisons,⁸ which involves routine screening at entry and exit, with periodic mass screening irrespective of symptoms using chest radiography and rapid diagnostic tests.⁹

However, even in the ideal setting of having funds available to implement all these interventions, the problem is far beyond health systems only. Several drivers of overcrowding in prisons are related to the judicial system. Mechanisms alternative to incarceration and avoiding delaying in sentences are needed along with assurance of appropriate infrastructure, ventilation, and isolation rooms in prisons. Spatial and molecular epidemiology studies in Peru have shown a prison spillover effect of MDR-TB in surrounding communities¹⁰ which could be related to informal public transportation to prisons, consisting of small and overcrowded vehicles.

In conclusion, TB in PDL is a problem that needs to be properly pointed out and urgently addressed. Transparent data collection and sharing are urgently needed to evaluate the magnitude of the problem and to monitor efficacy of interventions. Active screening during prison arrival and discharge as well as periodic mass screening based on chest radiography and rapid diagnostic tests, should be routinely implemented. TB detection efforts should be directed not only to PDL but



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to prison workers and visitors. In parallel, the justice administration should work on having a more efficient system with opportune sentences and better infrastructure including less crowded and healthier environments. A less unequal society will ultimately reduce the criminal rates and consequently the number of PDLs and TB related cases. In the meantime, political will, transparent information, and evidence-based policies should be the backbone of our joint efforts.

Contributors

AS has conceptualized and wrote the comment.

Declaration of interests

The author declares no conflicts of interest.

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