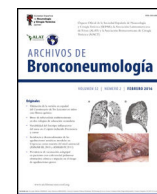




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## Editorial

### Addressing Neglected ‘Hot Spots’ of Tuberculosis Persistent Transmission: Prisons and Jails

Prisons remain a neglected area of prevention and health-care worldwide. They present higher incidence and prevalence of several infectious diseases than the general population [1,2]. In particular, there is wide evidence that, in prisons, tuberculosis (TB) is not under control in most countries and general TB control efforts often forget prisons [1,3,4]. If we consider that TB is a disease that disproportionately affects marginalized groups, prisons are the place where most of these groups are (highly) disproportionately included.

In the vast majority of prisons, the high level of overcrowding and the persistent limited access to health services increase the risk of diagnostic delay, and consequently, the transmission of TB [3]. In fact, the prison population is at greater risk of TB transmission and infection with a 35 times higher risk of TB infection than the general population [3]. This overturns indoor prison transmission to the community and it becomes a multiplier effect on the transmission chain of TB outside prisons: people working in prison or visitors can be infected and bring TB to the community; prisoners may be infected in prison, but diagnosed later in the community or released before starting or completing treatment. Several reports have confirmed so far that the excess risk of TB within prisons extends to the surrounding communities [3]. In addition, the understanding of the influence of prisons as drivers of recent multidrug-resistant (MDR)-TB epidemic inside the prisons and into the related populations has become an urgent need to improve control of MDR-TB epidemic.

If we look at the TB epidemic in prison what is true for TB is ‘more true’ for MDRTB, given the challenges for diagnosis and treatment and the consequences for the community at large. So far, we can recognize that key drivers of TB/MDR-TB epidemics and secondary transmissions, are: high-congregate settings, overcrowding, poor ventilation, poor sanitation, insufficient logistics chain, for ensure continuity of treatment, incomplete treatments often interrupted at insufficient doses and a high prevalence of comorbidities, untreated/undiagnosed TB infection and TB disease among inmates that often have untreated previous health conditions that favor TB transmission and/or occurrence [1–3,5].

Nevertheless, such factors do not explain the whole phenomena and new information, based on genome sequencing, is arising on transmission dynamics, thanks to phylogenetic and genomic clustering approaches, timed transmission trees, etc. [1,2,6,7]. Yet the role of prisons as reservoirs of *Mycobacterium tuberculosis*, propagating epidemics through spillover to surrounding communities, has been difficult to measure directly. In this context, the impor-

tance of prisons in TB control seems to be well acknowledged by the TB community [1–5], however, several key areas of TB control in prisons remain partially or totally neglected by national and local programs.

In this Editorial we want to rise attention to them by highlighting challenges and priorities in knowing, measuring and addressing them, with particular attention to persistent transmission. Additionally, during recent years, the Coronavirus disease 2019 (COVID-19) epidemic stressed the system. A basic example may come from the reduced rate of notification of TB cases from World Health Organization European Office and Pan American Health Organization regions [5], but also from other reports in similar settings [8]. The epidemic may have favored the arousal of new challenges to TB control programs, especially in prisons, such as in the areas screening, diagnosis, procurement of diagnostics and drugs, follow up of treated patients, infection control activities, etc. [3,5,8]. This may have determined medium/long term consequences on TB control in prisons. Health care workers working in prisons during the COVID-19 pandemic were often overwhelmed with work, and challenges linked to the peculiarity of this setting were paired with the need to focus their activity on diagnosis and care of those affected by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and on the deployment of vaccination initiatives [3,5].

Table 1 summarizes recent evidence on challenges and priorities in TB control in prisons worldwide. All areas of TB control present challenges in prisons and are priorities for the National Programs. They are included in: epidemiological and individual risk factors (amplification of TB in prisons, risk of amplification of MDR-TB, personal risky behaviors; high HIV and co-infection prevalence); structural and environmental factors (overcrowding, poor ventilation, frequent transfers, high turnover, unstudied linkage with transmission dynamics with the community); access to health services (limited internal health services, shortage of health care staff, delays in diagnosis); diagnostics and screening (poor availability of screening resources; inconsistent and non-structured screening activities; competitive impact of COVID-19 epidemic); treatment and adherence (delayed start of treatment with frequent interruptions for shortage, discharge or transfer; poor adherence and supervision); surveillance and reporting (insufficient case registration and reporting; insufficient or no tracking of patients at release or transfer); prevention and public health measures (limited infection control activities and resources, no routine treatment of TB infection, activities unlinked with National Programs); social and

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**Table 1**  
Key areas of TB control in prisons: challenges and priorities.

Area	Major challenges	Description	Supporting evidence
Epidemiological and individual risk factors	Individual and behavioral risk factors	Drug use, alcohol use, smoking and other risk behaviors.	[1,2,9]
	High TB burden in prisons	Prisons as amplifiers of TB epidemics, with high rates of incidence, transmission and reinfection.	[1,2,4,7]
	Risk of Multidrug Resistant-TB (MDR-TB)	Higher MDR-TB prevalence and resistance patterns in prison due to compensatory mutations to adapt to the environment.	[2,6,10,11]
Structural and Environmental Factors	TB-HIV coinfection	Increasing morbidity and mortality in HIV-TB coinfection.	[2,5,8,9,11]
	Overcrowding, poor ventilation, poor sanitation and lack of infrastructure	Overcrowding as a major obstacle to achieve a safe, secure, healthy and human prison environment. Limited sunlight, poor air circulation, malnutrition/undernutrition, water scarcity, substandard buildings and infrastructure as high-risk environments for TB transmission.	[1,2]
	Frequent transfer, high turnover and movement.	Disruption of continuity of care and follow-up due to frequent new admissions, releases and intra-prison transfer.	[1,2,7–9,11,12]
Access to Health Services	TB chain transmission outside prisons	Workers and relatives as major contribution of TB chain transmission outside prisons.	[1,2,5]
	Limited health services	Under-resourced settings and limited access to medical service.	[1,2,3,7]
	Barriers to timely care	Delays in diagnosis, poor triage, prioritization of security.	[4,6,10,12–15]
Diagnostics and Screening	Shortage of human resources	Insufficiently trained staff for screening and treatment.	[2,4,6–8,11,12,14]
	Lack of systematic screening	Inconsistent, non-standardized entry and periodic mass screenings.	[5,6,10,12]
	Poor diagnostic capacity	Limited access to rapid tests, sample quality assessment, confirmatory testing.	[6,9,14,15]
Treatment and Adherence	COVID-19 impact	Disrupted programs, misattribution of symptoms, diagnostic delays.	[3,4,8,13,15]
	Delayed treatment initiation	Late diagnosis and treatment.	[6,8,10,13,15]
	Irregular or interrupted treatment	Discontinued treatment due to transfers, releases, or side effects.	[3,11,15]
Surveillance and Reporting	Poor adherence and outcomes	Low treatment completion, self-administered therapy.	[11]
	Inadequate data systems	Poor case registration, underreporting.	[3,11]
	Lack of monitoring and follow-up	Lack of post-release tracking or outcome evaluation.	[2,3,5,8,13,14]
Prevention and Public Health Measures	Lack of isolation, contact tracing, and basic IPC.	Lack of isolation, contact tracing, and basic IPC.	[3,4,6,8,14]
	Low use of preventive therapy, no routine mass screening.	Low use of preventive therapy, no routine mass screening.	[6,13,14]
	TB programs disconnected from community and national efforts, generic and non-adapted strategies.	TB programs disconnected from community and national efforts, generic and non-adapted strategies.	[1,2,5–7,11,14]
Social and Policy Issues	Stigma and discrimination	TB-related stigma in diagnosis and treatment.	[2,6,12]
	Awareness and knowledge	Lack of awareness and knowledge of TB symptoms and consequences.	[4,11,14]
	Low political commitment	Limited funding and prioritization of prison health.	[2,6]
	Health vs. Security prioritization	Security concerns override care access.	[2,7,11]

TB: tuberculosis; MDR: multidrug-resistant; HIV: human immunodeficiency virus; IPC: Infection Prevention and Control; COVID-19: Coronavirus Disease 2019.

policy issues (stigma, lack of awareness in staff and prisoners, limited funding for health in prison, security concerns: prisons are for security and not for health).

It is important to stress that almost any area of TB control is more difficult to take care of in prisons. The recent (and surely partial) evidence reported in this Editorial and summarized in the Table confirms that this is an ongoing issue. We made an effort to select relevant papers from the last 2–3 years, but we had to make an accurate selection since there is a constantly growing literature on this issue. In fact, searching on Pubmed the combination of TB and prison resulted in 117 papers between January 1st 2023 and July 25th 2025.

The evaluation of the recently published papers highlights that the key issues in TB control in prisons remain the same over the years, but there are increasing reports on how to overcome the obstacles in diverse prison settings and in many different countries. This latter consideration offers hope that if prisons regain attention on their role in TB control, stakeholders will look at the published successful experiences and nobody will try to ‘reinvent the wheel’ wasting time and efforts to find apparently new solutions that, in reality, have already been shared and published.

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All authors wrote, revised and approved the submitted version of the paper.

### Artificial intelligence involvement

None of the material has been partially or totally produced with the help of any artificial intelligence software or tool.

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The authors declare not to have any conflicts of interest that may be considered to influence directly or indirectly the content of the manuscript.

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