

## PRISONS AS A RESERVOIR FOR COMMUNITY TRANSMISSION OF TUBERCULOSIS: MIXED METHODS EVIDENCE FROM A BRAZILIAN CITY

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The prevalence of tuberculosis (TB) in prisons is often orders of magnitude higher than in the general population; the hypothesis was that prisons represent a reservoir for disease transmission to the community. We performed a case-control study between June 2009 and August 2011 and a molecular epidemiology study of positive cultures from TB patients between June 2009 and March 2013 in two distinct populations in Dourados (urban and prison populations). Each TB case was paired with two controls matched according to age and geographical location to assess risk factors, using multivariable conditional logistic regression. We used IS6110-RFLP to assess for clusters of transmission. In 46 months 240 cases of TB occurred in the city; 180 (75%) occurred among the general urban population (incidence: 26:100,000 person-years) and 60 (25%) occurred among prisoners (incidence:1,044:100,000). An additional 23% of cases in the general population occurred among previously incarcerated individuals. The risk factors for TB in the urban population were male gender [OR 6.6], individual income  $\leq$  100 US\$ [OR 3.4], alcoholism [OR 11.5], history of contact with TB [OR 5.6] and previous incarceration [OR 24.5]. Molecular analysis revealed clusters temporally distributed over the study period among the urban and prison population, highlighting the spread of TB between the two populations. Of the 59 cases from the urban population for whom RFLP data were available, 32 (54%) had strains whose genotype was the same as the strains isolated from the prison population. Among these cases, 17 were ex-prisoners and 11/14 (79%) developed TB between 6 months and 2 year after leaving prison. Previous incarceration was strongly associated with TB in the urban population, and genotypic data indicate that there is considerable spill-over into the general urban population. Interventions to improve TB control in prisons could potentially protect not only prisoners but the broader community.

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