

## Is HIV Infection a Risk Factor for Multidrug-Resistant Tuberculosis or Overlapping Epidemics?

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Persons infected with both tuberculosis (TB) and human immunodeficiency virus (HIV) are much more likely to develop active TB than persons infected with TB, but without HIV infection approximately two folds. In 2012, the estimate global multidrug-resistant TB (MDR-TB) incidence was about 450,000 cases (95% Confidential Interval (CI): 300,000 - 600,000), representing nearly 5% of the globally annual TB burden. The population-level data on the association between HIV infection and MDR-TB are limited although institutional outbreaks of MDR-TB among people living with HIV have been reported. In settings with a low HIV infection prevalence and well-performing MDR-TB programmes, the treatment success is approximately 70% to 80%, whereas treatment success in settings with well-performing TB programmes may exceed 90%. The previously conventional 24-month MDR-TB treatment regimens cost on the average 100- to 300-folds higher than those associated with drug-susceptible TB. HIV infection may contribute to malabsorption of anti-TB drugs and acquired rifampicin resistance or MDR-TB. Thus, in HIV-prevalent countries, much effort on TB control programmes used for increased caseloads, can increase the risk of acquired MDR-TB. HIV and MDR-TB surveillance data indicated that HIV infection and MDR-TB may converge in many countries. A previous study on the data of the Global Project on Anti-TB Drug Resistance Surveillance among 11 countries suggested that HIV-infected TB patients had a significant higher odds ( $p < 0.05$ ) of MDR-TB than HIV-negative TB patients. A previous study in northern Thailand conducted between 1996 and 1998 among 1,077 incident TB patients without previous history of TB treatment revealed that MDR-TB (resistance to at least both isoniazid and rifampicin) was identified in 6.3%. The factors associated with primary MDR-TB were HIV positivity (Odd Ratio (OR) = 2.2, 95% Confidential Interval = 1.3 - 3.9), age < 50 years (OR = 2.0), and treatment in the provincial general hospitals (OR = 2.3), compared to patients treated in the community and private hospitals. The stratified analysis in this study demonstrated a significantly high prevalence of primary MDR-TB among HIV-infected patients treated in the provincial general hospital against HIV-negative patients or HIV-positive patients in other hospitals.

In conclusion, HIV infection is associated with primary MDR-TB although overall association between HIV and MDR-TB or acquired MDR-TB. On the basis of the existing evidence, the global community must currently act to prevent further convergence of the HIV infection and MDR-TB epidemics, as well as further emergence of extensively drug-resistant TB globally. Further well-designed studies and surveillance throughout the world are urgently needed to better clarify the association between HIV infection and MDR-TB.

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