Multidrug-resistant TB appears less transmissible in households than drug-susceptible TB

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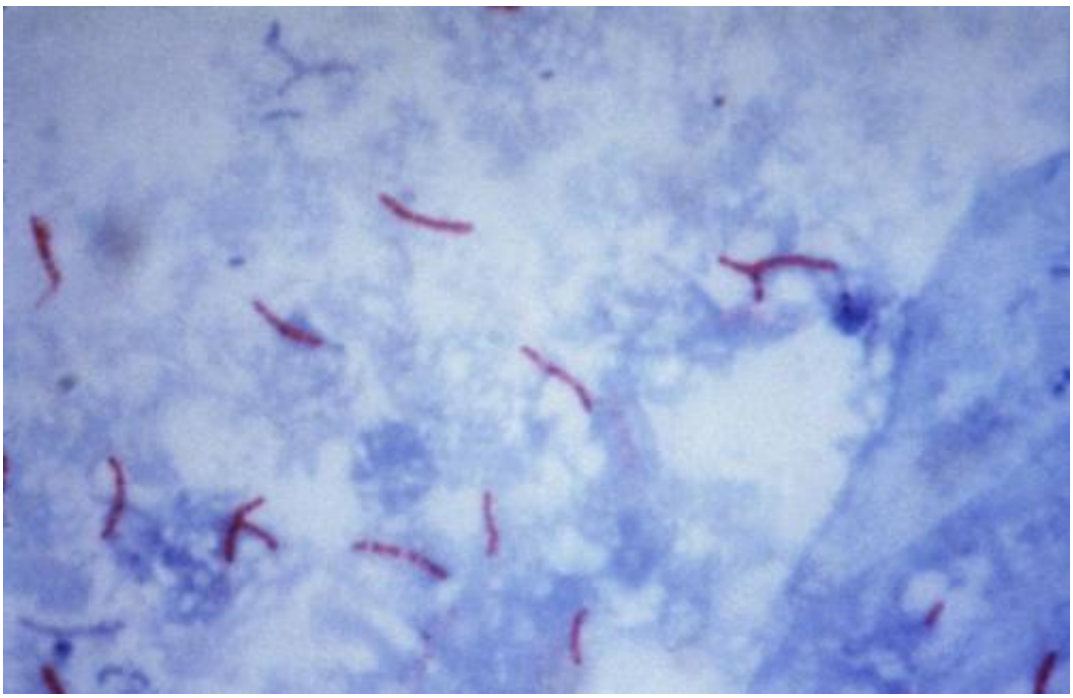

This photomicrograph reveals Mycobacterium tuberculosis bacteria using acid-fast Ziehl-Neelsen stain; Magnified 1000 X. The acid-fast stains depend on the ability of mycobacteria to retain dye when treated with mineral acid or an acid-alcohol solution such as the Ziehl-Neelsen, or the Kinyoun stains that are carbolfuchsin methods specific for M. tuberculosis. Credit: public domain

Some strains of multidrug resistant tuberculosis (MDRTB) may have a lower fitness (be less capable of spreading) than drug-susceptible

tuberculosis bacteria, according to a study published this week in *PLOS Medicine*. The study, conducted by Louis Grandjean of Imperial College London, and colleagues, compared new tuberculosis cases among household contacts of tuberculosis patients in South Lima and Callao, Peru to determine the relative fitness of MDRTB versus drug-susceptible tuberculosis.

The study followed 1,055 household contacts of 213 individuals with MDRTB infection (defined by resistance to the drugs rifampicin and isoniazid), and 2,362 household contacts of 487 individuals with drug-susceptible tuberculosis for up to three years. Thirty-five (3.3%) of MDRTB contacts and 114 (4.8%) of drug-susceptible tuberculosis contacts developed tuberculosis. When the authors adjusted for risk factors such as HIV status, socio-economic status, and sputum smear grade (a measure associated with higher risk of transmission) of the index case, household contacts of MDRTB cases were 44% less likely to contract tuberculosis than were contacts of drug-susceptible tuberculosis cases.

Previous laboratory findings as well as estimates of fitness based on genetic clustering of strains in the population suggested a lower relative fitness for MDRTB compared to drug-susceptible tuberculosis, but few studies have directly measured the incidence of second cases of tuberculosis among contacts of both MDRTB and drug-susceptible tuberculosis. The researchers note that they did not have genoptyping data for infections in household contacts, so some of these secondary cases may have been transmitted from someone outside the household. Additionally, transmission dynamics may be different in the community setting outside households or in different countries, and more fit MDRTB strains may emerge in the future.

Despite these limitations, the authors say that their findings are "welcome and encouraging news for tuberculosis control programs and

health services attempting to contain the spread of MDRTB."

More information: Grandjean L, Gilman RH, Martin L, Soto E, Castro B, Lopez S, et al. (2015) Transmission of Multidrug-Resistant and Drug-Susceptible Tuberculosis within Households: A Prospective Cohort Study. *PLoS Med* 12(6): e1001843. DOI: 10.1371/journal.pmed.1001843

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