

International study reveals alarming levels of extensively drug-resistant tuberculosis

August 29 2012

A large, international study published Online First in *The Lancet* reveals alarming levels of tuberculosis (TB) that are resistant to both first-line and second-line drugs. The findings show high prevalence of resistance to at least one second-line drug (43.7%) among multidrug-resistant (MDR) TB patients from eight countries in Africa, Asia, Europe, and Latin America. Worse still, the study found higher than expected overall levels of extensively drug-resistant (XDR) TB.

"Most international recommendations for [TB control](#) have been developed for MDR TB prevalence of up to around 5%. Yet now we face prevalence up to ten times higher in some places, where almost half of the patients with infectious disease are transmitting MDR strains", warns Sven Hoffner from the Swedish Institute for Communicable Disease Control in a linked Comment.

"Drug-resistant TB is more difficult and costly to treat, and more often fatal. Internationally, it is particularly worrisome in areas with fewer resources and less access to effective therapies. As more individuals are diagnosed with, and treated for, [drug-resistant TB](#), more resistance to second-line drugs is expected to emerge," explains Tracy Dalton, the study's lead author from the US Centers for Disease Control and Prevention (CDC). "So far, XDR TB has been reported in 77 countries worldwide, but exact prevalence remains unclear."

In the Preserving Effective [TB Treatment](#) Study (PETTS), Dalton and colleagues used population-based data to quantify the extent of XDR TB

and identify [risk factors](#) for being infected with a strain resistant to second-line drugs among people with MDR TB from Estonia, Latvia, Peru, the Philippines, Russia, South Africa, South Korea, and Thailand.

Isolates from 1278 adults with MDR TB were shipped to the US CDC and tested for susceptibility to 11 first-line and second-line antituberculosis drugs.

The prevalence of resistance varied widely between countries. Overall, resistance to any second-line drug was detected in nearly 44% of patients, ranging from 33% in Thailand to 62% in Latvia. In a fifth of cases resistance to at least one second-line injectable drug was identified, ranging from 2% in the Philippines to 47% in Latvia. The proportion of cases with resistance to a fluoroquinolone was almost 13%, with the lowest prevalence in the Philippines (7%) and the highest in South Korea (32%).

XDR TB was detected in 6.7% patients overall, with prevalence in [South Korea](#) (15.2%) and Russia (11.3%) more than twice the current WHO global estimate, at 5.4%.

Among the study's other key findings were that risk of XDR disease was more than quadrupled in previously treated patients, and previous treatment with second-line drugs was consistently the strongest risk factor for resistance to these drugs.

Further analysis also found unemployment, a history of imprisonment, alcohol abuse, and smoking as factors associated with [resistance](#) to second-line injectable drugs, suggesting that "social factors should be taken into account in the management of TB", says Dalton.

According to Dalton, "our country-specific results can be extrapolated to guide in-country policy for laboratory capacity and for designing

effective treatment recommendations for MDR TB."

Commenting on the paper, Hoffner adds, "These results show that XDR TB is increasingly a cause for concern, especially in areas where prevalence of MDR TB is high. Nevertheless, information remains insufficient to give a clear view of the worldwide distribution and true magnitude of XDR TB. Updated information on MDR TB and investigation of the trends are urgently needed...especially since the true scale of the burden of MDR and XDR tuberculosis might be underestimated and seem to be rapidly increasing."

Provided by Lancet

Citation: International study reveals alarming levels of extensively drug-resistant tuberculosis (2012, August 29) retrieved 11 July 2023 from <https://medicalxpress.com/news/2012-08-international-reveals-alarming-extensively-drug-resistant.html>

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