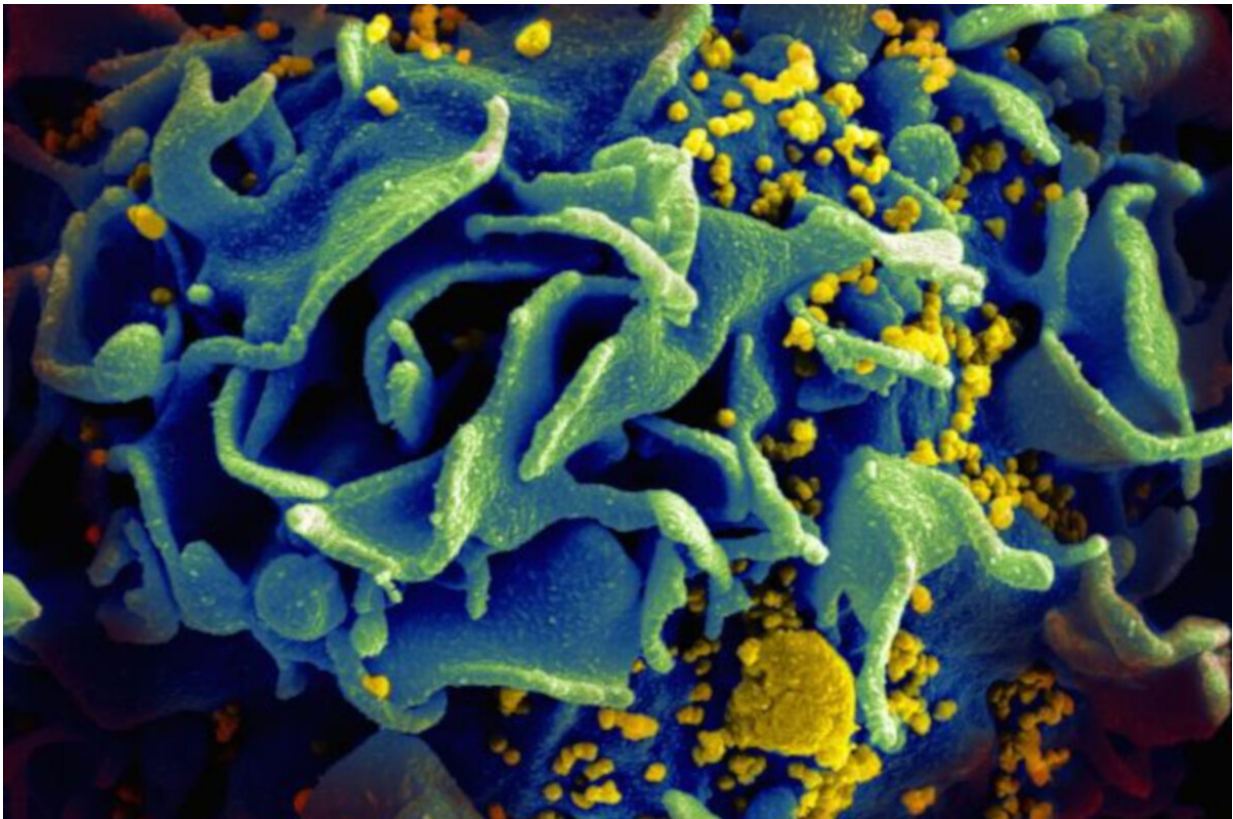


Research suggests greater access to specific HIV and tuberculosis medications is needed

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Microscopic image of an HIV-infected T cell. Credit: NIAID

After looking at the health records of over 10,000 patients with both HIV and multidrug resistant tuberculosis (TB) in over 20 different countries, researchers at the Perelman School of Medicine at the

University of Pennsylvania in collaboration with the Centers for Disease Control and Prevention, McGill University, and other institutions around the world, found that implementing antiretroviral therapy (ART) for HIV and newer tuberculosis medications decreased the risk of death for adults with drug-resistant TB. While the treatments associated with lower mortality risk are common in the United States and are recommended by the WHO as the best treatment for these patients, global accessibility varies widely. The findings, which were published today in *The Lancet*, suggest that every effort should be made to quickly bring these life-saving medications to those in need.

In the largest individual patient data meta-analysis study to assess mortality risk of people with both HIV and multi-drug resistant TB, scientists first compared the risk of death for HIV-positive people versus HIV-negative people, then examined how receiving ART and different types of TB drugs altered this risk. Because of the large sample size, associations of specific TB drugs with mortality were evaluated, focusing on the most effective drugs, categorized as "Group A" by the World Health Organization (WHO). Data from 52 studies and 37 different countries was used, and the investigators controlled for things like age, the wealth of the region in which the individuals lived, and severity of drug resistance. Researchers ultimately found that while patients with HIV infection were at higher risk of death, this risk was reduced substantially when Group A TB drugs and ART were used. As there are various types of Group A TB medications, the odds survival varied based on which Group A [medication](#) or combination was employed. When looking at only those with HIV, the risk of death was reduced by over 80% with use of specific TB drugs.

"Previous smaller studies had suggested these associations, but the large scale of this study solidifies the importance of using ART and the WHO Group A TB medications such as later-generation fluoroquinolones, bedaquiline, and linezolid to treat those who both have drug-resistant TB

and are also HIV positive," said lead author Gregory Bisson, MD, MSCE, an Infectious Diseases specialist and an associate professor of Medicine at Penn. "In addition, using mortality as a measure of whether this treatment was effective offered clear answers as to just how valuable these medications are."

Having both tuberculosis and HIV is not uncommon. Multi-drug resistant TB affects roughly half a million people around the world every year according to the WHO. And of all those with TB, about 9 percent are also HIV positive. It is not surprising since HIV makes people more susceptible to all kinds of infections, like TB, as well as viral and fungal infections, Bisson said. But the reason patients in need don't often receive effective treatments for one or both of the conditions is mostly due to accessibility.

"The availability of ART and the most effective TB medications often depends on where patients live," Bisson said. "Previous studies have found that in some regions only a third of patients with drug-resistant TB access effective treatment. Given the associations with mortality we found in this study, there should be urgency in the medical community to find ways to make these medications more affordable and available."

While ART has been found to decrease risk of death when given during treatment of drug-sensitive TB, there has been less evidence indicating this is the case in the more complex case of highly-drug resistant TB disease, Bisson said. Hesitance to use ART when patients are on several drugs for drug-resistant TB may also come from the potential toxicity of ART medications. Negative effects from ART can range from neuropathy to a rash and central nervous system toxicity. While Bisson agrees that ART medications may have adverse effects, their benefits far outweigh their risks including in drug-resistant TB.

Bisson's research lays a foundation to further investigate the success of

specific ARTs in conjunction with TB medications. It also allows the [medical community](#) to study methods that might bring these treatments to those who have trouble affording them or accessing them where they live.

Provided by Perelman School of Medicine at the University of Pennsylvania

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