

# AIDS-immunocompromised populations see more antibiotic-resistant infections

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Populations with a high prevalence of AIDS-immunocompromised people are more likely to see the emergence of antibiotic-resistant bacterial infections, according to a study coauthored by researchers at the University of Tennessee, Knoxville, and published in *PLOS One*.

"People with weakened immune systems are more vulnerable to opportunistic bacterial infections and are therefore frequently prescribed antibiotics to prevent or treat these infections," said Nina Fefferman, a professor in UT's Department of Ecology and Evolutionary Biology and coauthor of the study. "This increases the exposure of those bacteria to antibiotics, giving them more chances to evolve to become resistant to the medication and contributing to the current serious public health threat of drug-resistant diseases."

The research was led by Ashley DeNegre, who at the time of the study was an ecology and [evolutionary biology](#) Ph.D. student at Rutgers University–New Brunswick. Kellen Myers, research assistant in UT's Department of Ecology and Evolutionary Biology and the UT-based National Institute of Mathematical and Biological Synthesis, also participated in the research.

For the study, scientists used mathematical models to integrate and extend results from many previous studies to consider the effect on the emergence of antibiotic resistance in two populations: the African nation of Swaziland, where there was a reported HIV/AIDS prevalence of 27.4 percent of the population, and Indonesia, in southeast Asia, where there

was a much lower reported HIV/AIDS prevalence of 0.46 percent.

The results provide a better understanding of epidemiological patterns in populations with a high number of immunocompromised people due to AIDS and HIV, with special attention to low-income communities in the [developing world](#).

"This work will hopefully help inform public health decision makers about how antibiotic stewardship should be tailored differently in high-prevalence AIDS-affected communities to help combat the rising global risk of drug-resistant infections," said Fefferman.

**More information:** Ashley A. DeNegre et al. Emergence of antibiotic resistance in immunocompromised host populations: A case study of emerging antibiotic resistant tuberculosis in AIDS patients, *PLOS ONE* (2019). [DOI: 10.1371/journal.pone.0212969](https://doi.org/10.1371/journal.pone.0212969)

Provided by University of Tennessee at Knoxville

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