

Patients harboring *E. coli* with highly resistant MCR-1 gene found In NYC hospital

April 8 2019



Escherichia coli. Credit: Rocky Mountain Laboratories, NIAID, NIH

A team of investigators has identified a cluster of four patients harboring *Escherichia coli* carrying a rare antibiotic resistance gene, *mcr-1*. That gene renders the microbe resistant to colistin, an antibiotic of last resort

against some multidrug-resistant infections. Three of those patients showed no symptoms, raising the risk of spread. The research is published in *Antimicrobial Agents and Chemotherapy*, a journal of the American Society for Microbiology.

"Our findings were part of a prospective surveillance study of [patients](#) with a weakened immune system, and our characterization of these isolates had originally missed this type of [resistance](#), since it is not identified by conventional drug susceptibility testing," said principal investigator Anne-Catrin Uhlemann, MD, Ph.D., Associate Professor, Columbia University Vagelos College of Physicians and Surgeons.

"While *mcr-1* has been described from other parts of the world, it has been very rare in the US."

Using whole genome sequencing, the investigators found that the [bacteria](#) in each patient, while closely related to each other, were not identical. "We then reviewed the clinical course of each individual and noted that the first patient had presented with an infection, whereas the other three only carried the bacteria in their feces," said Dr. Uhlemann. "None of these three patients developed an infection with these bacteria."

"The detection of this cluster demonstrates the potential for silent dissemination of *mcr-1* in the US hospital setting, through asymptomatic colonization," said Dr. Uhlemann. "Our findings represent the earliest known documented healthcare-associated cluster of *mcr-1* in the United States, and predates a recent report that occurred in 2017." However, Dr. Uhlemann emphasized that the team's molecular survey of more than 500 samples detected no additional cases, and that "colonization was not associated with clinical [infection](#)."

The research grew out of a concern with the growing prevalence of antimicrobial resistance, said Dr. Uhlemann, noting that current

predictions suggest that by 2050 resistant infections might cause more deaths than cancer.

"We routinely examine the stool samples from patients undergoing liver transplantation for colonization with drug-resistant bacteria," said Dr. Uhlemann. "Our findings highlight the need for ongoing surveillance of *mcr-1* and other forms of transferrable resistance to polymyxins [a type of antibiotic] in the US."

They further suggest that patients with a weakened [immune system](#) are at particular risk to acquire these types of bacteria, and are important to study. In order to stop further spread of emerging forms of polymyxin resistance, further surveillance approaches need to recognize that clinical isolates may only represent the tip of the iceberg of the burden of asymptomatic colonization.

Provided by American Society for Microbiology

Citation: Patients harboring E. coli with highly resistant MCR-1 gene found In NYC hospital (2019, April 8) retrieved 4 May 2024 from <https://medicalxpress.com/news/2019-04-patients-harboring-coli-highly-resistant.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.