

Colistin-resistant gene detected in the US for the second time

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For the second time, a clinical isolate of a bacterial pathogen has been detected in humans in the United States which carries the colistin resistance gene, *mcr-1*. This may also be the first case to show up in the US. That would be concerning because plasmids, genetic elements that are independent of the host genome, often jump between different bacterial species, spreading any resistance genes they carry. The research, the most comprehensive and contemporary surveillance data for *mcr-1* to date, is published July 11 in *Antimicrobial Agents and Chemotherapy*, a journal of the American Society for Microbiology.

In the current study, the authors, who coordinate the worldwide SENTRY Antimicrobial Surveillance Program, first tested 13,526 *Escherichia coli* and 7,480 *Klebsiella pneumoniae* clinical strains that had been collected systematically from hospitals in the Asia-Pacific region, Latin America, Europe, and North America in 2015. They found that 390—1.9 percent—were resistant to colistin, and that 19 of these isolates tested positive for *mcr-1*.

The 19 isolates originated in ten countries representing all of the above regions. However, only one, an isolate of *E.coli* that was originally recovered in 2015 from a patient in New York, came from the US. (Previously, a single isolate containing *mcr-1*-positive *E. coli*, was identified from a patient in Pennsylvania.)

The isolates that tested positive for *mcr-1* were susceptible to several commonly used antimicrobial agents, including carbapenems, and

recently approved anti-microbial agents that can be used against [gram negative bacteria](#), generally, said corresponding author, Mariana Castanheira, PhD., Director for Molecular and Microbiology, at JMI Laboratories, North Liberty, IA. These and similar isolates are unlikely to cause hard to treat infections at this time.

A key question the authors are currently working to answer is whether the mcr-1 gene is plasmid-mediated in the isolates they have identified. Plasmid-mediated mcr-1 was first isolated from food animals and humans in China, in late 2015. Given this possibility, and the potential of plasmids to jump to other bacteria, especially to those that are already resistant to other antibiotics, as well as the gene's global distribution, close monitoring of the gene is warranted, according to the authors.

"The fact that the gene has been detected in food livestock and raw meat is also concerning," said Castanheira. "The prospect of a mobile gene encoding resistance to colistin spreading among isolates resistant to most [antimicrobial agents](#) clinically available is threatening for the therapy of serious infection caused by isolates," the investigators conclude. Additional studies are ongoing.

Provided by American Society for Microbiology

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