



# Health Alert Network

## Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Phone 303/220-9200 • Fax 303/741-4173 • [www.tchd.org](http://www.tchd.org)

Follow us on Twitter @TCHDHealth and @TCHDEmergency

John M. Douglas, Jr., M.D. Executive Director

The pages that follow contain information critical to protecting the health of your patients and the citizens of Colorado.

## HAN ALERT

Number of pages including cover: 4

Subject: **Alert - First mcr-1 Gene in E. coli Found in a Human in the US**

Message ID: 6/5/2016 12:00:00 PM

Recipients: HAN Community Members.

From: TRI-COUNTY HEALTH DEPARTMENT

Adams, Arapahoe and Douglas County, Colorado

Recipient Instructions: **Tri-County Health Department is forwarding you the attached HAN. You may have already received this broadcast if you are on the CDPHE distribution list, however, we wanted to ensure you did not miss this important information. No response is required.**

=====

You have received this message based upon the information contained within our Health Alert Network Notification System. If you have a different or additional e-mail or fax address that you would like us to use, or if you have additional questions, call 720-200-1477.

### Categories of Health Alert Network Messages:

**Health Alert:** Conveys the highest level of importance; warrants immediate action or attention.

**Health Advisory:** Provides important information for a specific incident or situation; may not require immediate action.

**Health Update:** Provides updated information regarding an incident or situation; unlikely to require immediate action.

**Info Service/Public Health Brief:** Provides general information that is not necessarily considered to be of an emergent nature.

You may download a copy of this HAN from the TCHD website at  
<http://www.tchd.org/259/Health-Alert-Network>



## COLORADO

Department of Public  
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

HEALTH ALERT NETWORK BROADCAST

MESSAGE ID: 06152016 9:15

FROM: CO-CDPHE

SUBJECT: HAN Alert - First *mcr-1* Gene in *E. coli* Found in a Human in the US

RECIPIENTS: Local Public Health Agencies / IPs / Clinical Labs / ID Physicians

RECIPIENT INSTRUCTIONS: Local Health Public Health Agencies - please forward to healthcare providers

### HEALTH ALERT

First *mcr-1* Gene in *E. coli* Found in a Human in the US

June 15, 2016

**\*\*\*Health care providers: Please distribute widely in your office\*\*\***

#### KEY POINTS:

- *E. coli* bacteria carrying the *mcr-1* gene were found in a urine sample from a person in Pennsylvania with no recent travel outside of the United States who presented to a clinic with a urinary tract infection. The full CDC HAN can be found below.
- Colorado laboratories and health care providers that identify Enterobacteriaceae isolates with a minimum inhibitory concentration (MIC) to colistin of 4 ug/ml or higher should report these cases to CDPHE at 303-692-2700. Laboratories should save these isolates for possible submission to the state laboratory.
- For questions, please contact Sarah Janelle ([sarah.janelle@state.co.us](mailto:sarah.janelle@state.co.us) or 303-692-3018) or Wendy Bamberg ([wendy.bamberg@state.co.us](mailto:wendy.bamberg@state.co.us) or 303-692-2491).

This is an official

## CDC HEALTH ADVISORY

Distributed via the CDC Health Alert Network

June 13, 2016, 13:35 EDT (1:35 PM EDT)

CDCHAN-00390

### Alert to U.S. Healthcare Facilities: First *mcr-1* Gene in *E. coli* Bacteria found in a Human in the United States

#### Summary

The Centers for Disease Control and Prevention (CDC) is collaborating in a coordinated public health response to the Department of Defense (DoD) [announcement on May 26 of the first \*mcr-1\* gene found in bacteria from a human in the United States](#) (<http://aac.asm.org/content/early/2016/05/25/AAC.01103-16.full.pdf+html>). *Escherichia coli* (*E. coli*) bacteria carrying the *mcr-1* gene were found in a urine sample from a person in Pennsylvania with no recent travel outside of the United States who presented to a clinic



with a urinary tract infection. The *mcr-1* gene makes bacteria resistant to the antibiotic colistin, which is used as a last-resort drug to treat patients with infections caused by multidrug-resistant bacteria, including carbapenem-resistant Enterobacteriaceae (CRE). The *mcr-1* gene exists on a plasmid, a small piece of DNA that is capable of moving from one bacterium to another, potentially spreading antibiotic resistance to other bacterial species. CDC is issuing this HAN notice as a reminder to U.S. healthcare facilities about recommendations to prevent antibiotic resistant infections and alert them to additional recommendations for detecting and reporting bacteria with the *mcr-1* gene.

## Background

In November 2015, a report from China first described plasmid-mediated colistin-resistance caused by the *mcr-1* gene. Following that report, retrospective investigations of historical isolates from outside the United States have identified the rare occurrence of *mcr-1* in Enterobacteriaceae from the 1980s. Bacteria with this resistance mechanism have now been identified from humans, food, environmental samples, and food animals in at least 20 countries around the world. Most reports to date have identified the *mcr-1* gene in *E. coli*, but it has also been reported from *Salmonella* species, *Shigella sonnei*, and *Klebsiella pneumoniae*.

Three *mcr-1* producing *E. coli* have been identified in the United States as of June 7, 2016: one in a clinical specimen from a person in Pennsylvania and two from intestinal samples from pigs. The *E. coli* isolate from the patient was also resistant to antibiotics in at least five additional antibiotic classes, including cephalosporins, fluoroquinolones, sulfonamides, aminoglycosides, and tetracyclines. The sample from one pig also was resistant to other antibiotics, including ampicillin, streptomycin, sulfisoxazole, and tetracycline. No additional resistance was found in the isolate from the second pig. The presence of the *mcr-1* gene on a plasmid means that colistin resistance can be shared with other more resistant bacteria such as CRE, raising the possibility that untreatable bacteria could develop. A rapid public health response is underway to identify and contain any potential spread from the patient. CDC laboratories have developed protocols for testing microorganisms for the *mcr-1* gene and are performing screening tests to see if people in contact with the patient with *mcr-1* might be colonized with this organism. CDC is increasing its surveillance of human samples from U.S. healthcare settings. CDC's National Antimicrobial Resistance Monitoring System, in collaboration with the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA), will continue to look for *mcr-1* mediated colistin resistance in enteric bacteria from humans, retail meat, and food animals.

## Recommendations

Given the discovery of *mcr-1* in a person in Pennsylvania, CDC reiterates the importance of measures to prevent transmission of antibiotic resistant bacteria, including those resistant to colistin or carrying the *mcr-1* gene. CDC recommends the following:

- **Infection Prevention:** Healthcare providers should follow [Standard and Contact Precautions \(http://www.cdc.gov/hicpac/2007IP/2007ip\\_part3.html\)](http://www.cdc.gov/hicpac/2007IP/2007ip_part3.html) for any patients colonized or infected with antibiotic resistant bacteria, including patients who are found to have *mcr-1* mediated resistant organisms. Healthcare facilities should follow manufacturers' instructions for device cleaning and reprocessing.
- **Laboratory Testing:** If laboratories are testing to determine whether colistin can be used clinically, Enterobacteriaceae isolates with a minimum inhibitory concentration (MIC) to colistin of 4 µg/ml or higher should be tested for confirmation and the presence of *mcr-1*. Thus far, all microorganisms that have contained the *mcr-1* gene can safely be tested in a biosafety level-2 (BSL-2) laboratory. Isolates should be sent to CDC for confirmatory testing via the state or local public health department, per the [CDC test directory \(http://www.cdc.gov/laboratory/specimen-submission/detail.html?CDCTestCode=CDC-10223\)](http://www.cdc.gov/laboratory/specimen-submission/detail.html?CDCTestCode=CDC-10223), if local testing is not available. The results and test method that were used for initial colistin testing should be included with any isolates submitted for confirmatory testing. CDC laboratories are in the process of validating a rapid polymerase chain reaction (PCR) test to detect *mcr-1* in bacteria with elevated colistin MICs. It is not necessary to test Enterobacteriaceae with intrinsic colistin resistance (e.g., *Proteus*, *Providencia*, *Morganella*, and *Serratia* species). Additionally, since *Enterobacter* species often have MICs of  $\geq 2$  mcg/ml to colistin, they should be sent for *mcr-1* testing only if other risk factors exist, such as a recent history of travel outside the United States to a [country where \*mcr-1\* has been found to be more common](#)



(<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21403>).

- **Validation of Laboratory Testing:** CDC is making test-bacteria with elevated colistin MICs, available to laboratories, researchers, and others through the [FDA-CDC Antimicrobial Resistance Bacteria Isolate Bank](http://www.cdc.gov/drugresistance/resistance-bank/) (<http://www.cdc.gov/drugresistance/resistance-bank/>) for use in validation of colistin-resistance testing in U.S. clinical laboratories.
- **Environmental Cleaning:** Healthcare facilities should ensure rooms where patients with antibiotic-resistant infections have been placed receive thorough daily and terminal cleaning.
- **Reporting to Public Health:** Healthcare facilities and laboratories should adhere to local reporting requirements for all antibiotic resistant infections. If Enterobacteriaceae with *mcr-1* are identified from patients, healthcare facilities and laboratories should notify local or state public health authorities as quickly as possible, and inform clinicians caring for the patient and responsible infection prevention staff.
- **Preparing food safely:** Cook all meat, poultry, and fish to its [proper internal temperature to kill bacteria](http://www.foodsafety.gov/keep/charts/mintemp.html) (<http://www.foodsafety.gov/keep/charts/mintemp.html>), viruses, and other foodborne pathogens, regardless of antibiotic resistance.

### For More Information

1. CDC Facility Guidance for Control of CRE: November 2015 Update:  
<http://www.cdc.gov/hai/pdfs/cre/CRE-guidance-508.pdf>
2. Responding to new Forms of Antibiotic Resistance:  
<http://www.cdc.gov/hai/pdfs/toolkits/Responding-to-New-Forms-of-Antibiotic-Resistance.pdf>
3. Biosafety in Microbiological and Biomedical Laboratories, 5<sup>th</sup> Edition:  
<http://www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf>
4. CDC Vital Signs Report: Making Health Care Safer, Protect Patients from Antibiotic Resistance:  
<http://www.cdc.gov/vitalsigns/protect-patients/index.html>

*The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.*

---

Categories of Health Alert Network messages:

Health Alert Requires immediate action or attention; highest level of importance

Health Advisory May not require immediate action; provides important information for a specific incident or situation

Health Update Unlikely to require immediate action; provides updated information regarding an incident or situation

HAN Info Service Does not require immediate action; provides general public health information

##This message was distributed to state and local health officers, state and local epidemiologists, state and local laboratory directors, public information officers, HAN coordinators, and clinician organizations##

