

**January 20, 2023**

## **Update: Multistate Cluster of VIM- and GES-producing Carbapenem-resistant *Pseudomonas aeruginosa* associated with Artificial Tears**

The Centers for Disease Control and Prevention (CDC) is investigating a multistate cluster of Verona Integron-mediated Metallo- $\beta$ -lactamase (VIM)- and Guiana-Extended Spectrum- $\beta$ -Lactamase (GES)-producing carbapenem-resistant *Pseudomonas aeruginosa* (VIM-GES-CRPA) associated with multiple different infection types, including eye infections. Recent epidemiology and laboratory evidence link these infections to use of EzriCare Artificial Tears.

From May 17, 2022, to January 19, 2023, CDC, in partnership with state and local health departments, identified 56 isolates from 50 case patients from 11 states (CA, CO, CT, FL, NJ, NM, NY, NV, TX, UT, WA) with VIM-GES-CRPA; 38 cases are part of 4 facility clusters. Dates of specimen collection are from May to December 2022. Isolates have been identified from clinical cultures of cornea (10), sputum or bronchial wash (11), urine (6), other nonsterile sources (4), and blood (2), and from rectal swabs (23) collected for surveillance. These specimens were collected in both outpatient and inpatient healthcare settings. Patient outcomes include permanent vision loss resulting from ocular infection, hospitalization, and death of one patient with bloodstream infection.

In addition to demonstrating carbapenem resistance, isolates in this cluster are resistant to ceftazidime and ceftipime; the subset of isolates that underwent antimicrobial susceptibility testing for ceftazidime-avibactam and ceftolozane-tazobactam were also resistant to these agents. Isolates are sequence type (ST) 1203, harbor *bla*<sub>VIM-80</sub> and *bla*<sub>GES-9</sub> (a combination not previously observed in the United States) and are closely related based on analysis of whole genome sequencing (WGS) data.

Review of common exposures among patients identified that the majority of patients used artificial tears prior to identification of VIM-GES-CRPA infection or colonization. The most common brand reported was EzriCare Artificial Tears, a preservative-free product dispensed in multidose bottles. Laboratory testing of EzriCare Artificial Tears by CDC identified the presence of VIM-CRPA in opened EzriCare bottles; these VIM-CRPA are undergoing further characterization, including testing for GES and to determine ST, to assess if they match the outbreak strain. Testing of unopened bottles of EzriCare Artificial Tears is ongoing.

CDC recommends that clinicians and patients immediately discontinue the use of EzriCare Artificial Tears until the epidemiological investigation and laboratory analyses are complete.

Clinical laboratories that identify any carbapenem-resistant *P. aeruginosa* from an ocular specimen or VIM-CRPA from any specimen source should submit the isolate to the Antimicrobial Resistance Laboratory Network for further characterization. Please reach out to your health department's healthcare-associated infections contact (<https://www.cdc.gov/hai/state-based/index.html>) or email [haioutbreak@cdc.gov](mailto:haioutbreak@cdc.gov) for assistance submitting isolates.