

Outbreak of Extensively Drug-resistant *Pseudomonas aeruginosa* Associated with Artificial Tears

DATE:	February 3, 2023
TO:	Health Alert Network
FROM:	Debra L. Bogen, MD, FAAP, Acting Secretary of Health
SUBJECT:	Outbreak of Extensively Drug-resistant <i>Pseudomonas aeruginosa</i> Associated with Artificial Tears
DISTRIBUTION:	Statewide
LOCATION:	n/a
STREET ADDRESS:	n/a
COUNTY:	n/a
MUNICIPALITY:	n/a
ZIP CODE:	n/a

This transmission is a “Health Advisory,” and provides updated information regarding an incident or situation; unlikely to require immediate action.

HOSPITALS: PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, NURSING AND LABORATORY STAFF IN YOUR HOSPITAL; **EMS COUNCILS:** PLEASE DISTRIBUTE AS APPROPRIATE; **FQHCs:** PLEASE DISTRIBUTE AS APPROPRIATE **LOCAL HEALTH JURISDICTIONS:** PLEASE DISTRIBUTE AS APPROPRIATE; **PROFESSIONAL ORGANIZATIONS:** PLEASE DISTRIBUTE TO YOUR MEMBERSHIP; **LONG-TERM CARE FACILITIES:** PLEASE SHARE WITH ALL MEDICAL, INFECTION CONTROL, AND NURSING STAFF IN YOUR FACILITY

An outbreak of infections with an extensively drug-resistant strain of Verona Integron-mediated Metallo- β -lactamase (VIM) and Guiana-Extended Spectrum- β -Lactamase (GES)-producing carbapenem-resistant *Pseudomonas aeruginosa* (VIM-GES-CRPA) has been identified with cases in 12 states. Cases have not yet been identified in Pennsylvania.

Most case-patients reported using EzriCare Artificial Tears, a preservative-free, over-the-counter product packaged in multidose bottles. CDC laboratory testing identified the presence of the outbreak strain in opened EzriCare bottles with different lot numbers collected from two states.

As a result of this outbreak, the Pennsylvania Department of Health is requesting that:

- Patients and healthcare providers immediately discontinue using EzriCare artificial tears pending additional guidance from CDC and the Food and Drug Administration (FDA).
- Providers treating patients for keratitis or endophthalmitis should consider culture and antimicrobial susceptibility testing to guide therapy if patients also report use of EzriCare artificial tears.
- Clinical laboratories that identify *P. aeruginosa* resistant to imipenem or meropenem are encouraged to send isolates to the Bureau of Laboratories for additional testing.

If you have any questions, or to report a suspected case of VIM-GES-CRPA, please call PA DOH at 1-877-PA-HEALTH (1-877-724-3258) or your local health department.

This advisory is based on Centers for Disease Control and Prevention (CDC) [Health Advisory 485](#), “**Outbreak of Extensively Drug-resistant *Pseudomonas aeruginosa* Associated with Artificial Tears**” and contains information specific to Pennsylvania providers and laboratories.

Background

As of January 31, 2023, CDC in partnership with state and local health departments identified 55 case-patients in 12 states (CA, CO, CT, FL, NJ, NM, NY, NV, TX, UT, WA, WI) with VIM-GES-CRPA, a rare strain of extensively drug-resistant *P. aeruginosa*. Thirty-five patients are linked to four healthcare facility clusters. Dates of specimen collection were from May 2022 to January 2023. Isolates have been identified from clinical cultures of sputum or bronchial wash (13), cornea (11), urine (7), other nonsterile sources (4), blood (2), and from rectal swabs (25) collected for surveillance; some patients had specimens collected from more than one anatomic site. These specimens were collected in both outpatient and inpatient healthcare settings. Patients had a variety of presentations including keratitis, endophthalmitis, respiratory infection, urinary tract infection, and sepsis. Patient outcomes include permanent vision loss resulting from cornea infection, hospitalization, and one death due to systemic infection.

Isolates in this outbreak are sequence type (ST) 1203, harbor *bla*VIM-80 and *bla*GES-9 (a combination not previously observed in the United States) and are closely related based on analysis of whole genome sequencing (WGS) data. These isolates are not susceptible to cefepime, ceftazidime, piperacillin-tazobactam, aztreonam, carbapenems, ceftazidime-avibactam, ceftolozane-tazobactam, fluoroquinolones, polymyxins, amikacin, gentamicin, and tobramycin; the subset of isolates that underwent antimicrobial susceptibility testing for cefiderocol were susceptible to this agent.

Review of common exposures revealed that most patients, including most patients with eye infections, used artificial tears prior to identification of VIM-GES-CRPA infection or colonization. Patients reported more than 10 brands of artificial tears, and some patients used multiple brands. The majority of patients who used artificial tears reported using EzriCare Artificial Tears, a preservative-free product dispensed in multidose bottles. This was the only common artificial tears product identified across the four healthcare facility clusters. CDC laboratory testing identified the presence of VIM-GES-CRPA in opened EzriCare Artificial Tears bottles from multiple lots; these bottles were collected from patients with and without eye infections in two states. These product-related VIM-GES-CRPA match the outbreak strain. VIM-GES-CRPA recovered from opened bottles could represent either bacterial contamination during use or during the manufacturing process. Testing of unopened bottles of EzriCare Artificial Tears is ongoing to assist in evaluating for whether contamination may have occurred during manufacturing.

Recommendations for Healthcare Providers

- Immediately discontinue using EzriCare Artificial Tears pending additional guidance from CDC and FDA.
- Advise patients who used EzriCare Artificial Tears to monitor for signs and symptoms of infection. Perform culture and antimicrobial susceptibility testing when clinically indicated.
- Healthcare providers treating patients for keratitis or endophthalmitis should ask patients if they have used EzriCare Artificial Tears. Providers should consider performing culture and antimicrobial susceptibility testing to help guide therapy if patients report use of this product.
- Healthcare providers treating VIM-GES-CRPA infections should consult with a specialist knowledgeable in the treatment of antibiotic-resistant bacteria to determine the best

treatment option. VIM-GES-CRPA isolates associated with this outbreak are extensively drug-resistant. Isolates that underwent susceptibility testing at public health laboratories were not susceptible to cefepime, ceftazidime, piperacillin-tazobactam, aztreonam, carbapenems, ceftazidime-avibactam, ceftolozane-tazobactam, fluoroquinolones, polymyxins, amikacin, gentamicin, and tobramycin. A subset of 3 isolates that underwent antimicrobial susceptibility testing for cefiderocol at clinical laboratories or CDC were susceptible to this agent.

- Place patients infected or colonized with VIM-GES-CRPA and admitted to acute care settings in isolation and use [Contact Precautions](#). For residents of skilled nursing facilities who are infected or colonized with VIM-GES-CRPA, use [Enhanced Barrier Precautions](#) if the resident does not have an indication for Contact Precautions.
- At this time, CDC does not recommend testing patients who have used this product and who are not experiencing any signs or symptoms of infection.
- Report cases to your local health department or to the Pennsylvania Department of Health. Additional infection prevention and control measure may be indicated.

Recommendations for Clinical Laboratories

- **Laboratories able to perform carbapenem resistance mechanism testing:** Clinical laboratories that identify *P. aeruginosa* resistant to imipenem or meropenem are encouraged to perform carbapenem resistance mechanism testing, if available.
 - Laboratories wishing to apply a more specific definition when identifying isolates that might be related to this cluster for mechanism testing could limit testing to carbapenem-resistant *P. aeruginosa* that are also resistant to cefepime, ceftazidime, and (if tested) ceftazidime-avibactam and ceftolozane-tazobactam.
- **Laboratories unable to perform carbapenem resistance mechanism testing:** Clinical laboratories that identify carbapenem-resistant *P. aeruginosa* from an ocular specimen, but do not have the capacity to perform carbapenem resistance mechanism testing, should submit isolates to the Bureau of Laboratories for additional testing.
- 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 Bureau of Laboratories. Please reach out to your local health department or contact the [Bureau of Laboratories](#) for assistance submitting isolates.

Recommendations for the Public

- Discontinue using EzriCare Artificial Tears pending additional guidance from CDC and FDA.
- If patients were advised to use EzriCare Artificial Tears by their healthcare provider, they should follow up with their healthcare provider for an alternative artificial tears product to use.
- Patients who used EzriCare Artificial Tears and who have signs or symptoms of an eye infection, such as discharge from the eye, eye pain or discomfort, redness of the eye or eyelid, feeling of something in the eye, increased sensitivity to light, or blurry vision, should seek timely medical care. At this time, CDC does not recommend testing of patients who have used this product and who are not experiencing any signs or symptoms of infection.

Reporting

Healthcare facilities, providers, and laboratories with suspected or confirmed cases of VIM-GES-CRPA, should report them to DOH by calling 1- 877-PA-HEALTH, or your local health department.

We request carbapenemase-producing organisms also be voluntarily reported into PA-NEDSS under the “Carbapenemase-producing organism” condition.

This information is current as of February 3, 2023 but may be modified in the future.