



Technical Bulletin



Date: January 21, 2020
Topic: Early Identification and Prevention of Carbapenem-resistant Enterobacteriaceae (CRE)
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To: Health Care Providers, Medical Facilities and Medical Laboratories

Background

Increasing antimicrobial resistance is limiting treatment options and threatening public health. Carbapenem antibiotics are often used as the last line of treatment for infections caused by highly resistant bacteria, including those in the Enterobacteriaceae family. Carbapenem-resistant Enterobacteriaceae (CRE) are difficult to treat pathogenic multidrug-resistant biological agents. They do not respond to commonly used antibiotics and are occasionally resistant to all available antibiotics.

The emergence and spread of carbapenemase-producing carbapenem-resistant *Enterobacteriaceae* (CP-CRE) is a significant clinical and public health concern. Reliable detection of CP-CRE is the first step in combating this problem. Carbapenemases are carbapenem-hydrolyzing beta-lactamases enzymes that confer resistance to a broad spectrum of beta-lactam substrates, including carbapenems.

The five most prevalent clinically concerning carbapenemases are: *Klebsiella pneumoniae* carbapenemase (KPC), New Delhi metallo- β -lactamase (NDM), Oxacillin-hydrolyzing β -lactamase-48 (OXA-48), Verona integron-encoded metallo- β -lactamase (VIM) and Imipenem-hydrolyzing β -lactamase (IMP).

Current Situation:

Most of the reports that Nevada Healthcare Associated Infection (HAI) Program received so far showed that *Klebsiella pneumoniae* carbapenemase (KPC) was the most common as KPC has been primarily responsible for the emergence of CRE in Nevada and nationally. However, we recently started to observe a gradual yet steady increase in the number patients who are infected with CP-CREs other than KPC – newly received reports include infections with NDM, OXA-48, VIM and IMP. Such cases have been rare in Nevada and usually travel associated; mostly acquired outside the United State. This increase is particularly concerning as most of these patients exhibiting such serious multidrug resistant infections are ventilator-dependent and had no recent travel history. This may imply they could have been exposed to- and contracted such CP-CRs from other patients within the facility itself. Inadequate infection control measures to prevent the spread of such dangerous bacteria could have contributed to this significantly increased transmission.

According to the Centers for Disease Control and Prevention (CDC) patients should be assessed during admission to determine if they received medical care somewhere else; other facilities and/or other countries. **All patients who have had overnight stay in healthcare facilities outside the United States (U.S.) in the prior 6 months should be screened for the presence of carbapenemase-producing CRE.** Isolates should be sent to a reference laboratory for confirmatory susceptibility testing and to determine the carbapenem resistance mechanism; at a minimum, this should include evaluation for KPC and NDM carbapenemases.

***Hospitals or other healthcare facilities who do not have this capability can submit specimens to the Nevada State Public Health Lab (NSPHL).**

Patients with a recent history of hospitalization (within the last six months) outside the United States who require admission to a healthcare facility in the U.S. should be considered for the following

- Rectal screening cultures to detect CRE colonization
- Contact Precautions while awaiting the results of screening cultures
- Proper infection prevention principles
- Patient and staff adherence to proper hand hygiene
- Strict environmental health services to ensure proper cleaners and EPA -approved disinfectants are used
- Proper don, doff and disposal of personal protective equipment (gown, gloves, masks, etc.)
- Proper utilization of *Interfacility Transfer Forms* and ensuring that all forms are easily accessible by the receiving facility

Because of increasing reports of multidrug resistant organisms, the CDC and the Division of Public and Behavioral Health are alerting clinicians about the urgent need to apply additional prevention steps to control the spread of such dangerous emerging bacteria.

Please review the CDC most recent Health Advisory <https://stacks.cdc.gov/view/cdc/25250>, and Guidelines for preventing the spread of CRE in healthcare settings.

<https://www.cdc.gov/hai/organisms/cre/cre-toolkit/index.html>.

Should you have any questions, please do not hesitate to contact Kimisha Causey at (702) 486 - 3568 or kcausey@health.nv.gov.



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