

Carbapenem-resistant *Enterobacteriaceae*

To: Vermont Healthcare Providers, Vermont Clinical Laboratories
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Carbapenem (imipenem, meropenem, ertapenem, doripenem)-resistant *Enterobacteriaceae* (CRE), a group of organisms resistant to almost all antimicrobial agents, is emerging as an important challenge in health care settings. *Klebsiella* is the most commonly implicated species of *Enterobacteriaceae*.

CRE infections are associated with high rates of morbidity and mortality, and may be more commonly found in people: (1) with prolonged hospitalizations; (2) who have underlying co-morbidities (e.g. immune suppression); (3) who are exposed to invasive devices (e.g. catheters, central lines). CRE infections are also associated with increased length of stay and increased costs.

Vermont Experience

Eight acute care facilities that responded to a recent Vermont Department of Health survey on CRE agree that CRE is an epidemiologically important multidrug-resistant organism for which infection control practices are indicated to eliminate transmission.

In the past 12 months, two of these facilities reported having a CRE-infected or colonized patient present in their facility.

- These facilities were unable to identify whether clinical cultures were detected before, within or after 48 hours of admission.
- Neither facility reported systems for timely alerting of the infection control staff by the microbiology laboratory.

Actions Requested

Acute care facilities should review CDC/HICPAC recommendations and implement appropriate strategies to limit spread of CRE <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5810a4.htm>

Surveillance

- Monitor for clinical infections.
- Consider screening patients at admission who are transferred from healthcare facilities (especially long-term acute care, long-term care facility) in endemic areas (e.g. New York City, Chicago, some places outside the U.S.).

If CRE or carbapenemase-producing *Klebsiella* spp. or *E. coli* are detected, consider investigating possible transmission:

- Conduct active surveillance testing of patients with epidemiologic links to a patient with CRE infection (e.g. patients in the same unit or who have been cared for by the same health care personnel).
- Continue active surveillance periodically (e.g., weekly) until no new cases of colonization or infection suggesting cross-transmission are identified.
- If transmission of CRE is not identified after repeated active surveillance testing, consider altering the surveillance strategy by performing periodic point prevalence surveys in high-risk units.

Clinical Microbiology Laboratory

- Incorporate into protocols for susceptibility testing the new Clinical and Laboratory Standards Institute's (CLSI) MIC and disk diffusion interpretive criteria (i.e., breakpoints) for the *Enterobacteriaceae* for carbapenems (imipenem, meropenem, ertapenem, doripenem).
- Establish systems to ensure prompt notification of infection prevention staff of all *Enterobacteriaceae* isolates that are non-susceptible to carbapenems.
- Follow established protocols for sending isolates to a reference laboratory for identification/susceptibility testing or for confirmation of susceptibility results.
- *Enterobacteriaceae* not fully susceptible to carbapenems (with the new, lower Clinical and Laboratory Standards Institute (CLSI) breakpoints), or resistant clinical or environmental isolates of concern, may be sent to the Vermont Department of Health Laboratory for referral to the Centers for Disease Control & Prevention for further characterization.

Infection Prevention and Control

- Implement contact precautions for patients colonized or infected with CRE or carbapenemase-producing *Enterobacteriaceae*. No recommendation can be made regarding when to discontinue contact precautions.

Report findings to the Vermont Department of Health

- Clinical and laboratory findings of CRE or carbapenemase-producing *Enterobacteriaceae* are considered reportable under the Vermont Communicable Disease Regulations.
- To report cases or for more information, contact Infectious Disease Epidemiology at 802-863-7240 (800-640-4374 in Vermont).

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