



Testing and Response for Clinical Laboratory Identification of Carbapenem-Resistant *Enterobacteriaceae* (CRE)*

Washington DOH surveillance case definition *E. coli*, *Klebsiella* spp., or *Enterobacter* spp. resistant to any carbapenem (MIC of ≥ 4 mcg/ml for meropenem, imipenem, and doripenem or ≥ 2 mcg/ml for ertapenem)

Clinical labs: Submit to Washington State Public Health Lab (PHL) with [PHL microbiology submission form](#) and local antimicrobial susceptibility test result

Infection Control: Ensure patient is on Standard Precautions + Contact Precautions (+ additional transmission-based precautions per patient status)

PCR testing at PHL for select carbapenemase genes (KPC, NDM-1, VIM, IMP, OXA-48)

CARBAPENEMASE TESTING RESULT IS SENT TO SUBMITTER, LOCAL HEALTH, AND FACILITY INFECTION CONTROL stating "Negative for KPC, NDM-1, VIM, IMP, OXA-48" or "Positive for carbapenemase" (type specified)

RECOMMENDED ACTIONS BY PUBLIC HEALTH AND/OR FACILITY INFECTION CONTROL

For all CRE (implement when CRE first identified)

- Flag medical records to indicate patient carries CRE.
- Educate healthcare providers and facilities caring for patient regarding infection transmission risk.
- Recommend healthcare providers use Contact Precautions for direct patient care in all healthcare settings.
- Request that facility microbiology perform retrospective and prospective surveillance for additional cases.
- Provide verbal and written educational materials to patient, and home caregivers.

For Carbapenemase-producing CRE

- In addition to recommended actions for all CRE, public health should investigate case to identify likely source and whether transmission has occurred to other patients.
 - **Strongly consider surveillance cultures of epi-linked patients, or point prevalence survey on affected ward if lapse in infection control.**
 - Local Health should report case through PHIMS as a "Rare Disease of Public Health Significance" and complete and fax supplemental [DOH CRE report form](#) to DOH Communicable Disease Epidemiology at 206-418-5515.

1. Additional information about CRE surveillance and investigation can be found in the Washington State Department of Health [CRE Reporting and Investigation Guideline](#). Please contact Office of Communicable Disease Epidemiology at 206-418-5500 with questions about this document.
2. Carbapenemase testing at PHL may not identify all potential carbapenemases, but is likely to identify most carbapenemases found in *Enterobacteriaceae* in the US.
3. PHL will test other carbapenem-resistant Gram-negative bacteria for carbapenemases upon request. Please call Office of Communicable Disease Epidemiology at 206-418-5500 for consultation.

Infection Control for CRE in Different Health Care Settings

	Acute Care			
Infection Prevention Measure	CP-CRE		Non-CP-CRE	
	Infected	Colonized	Infected	Colonized
Standard Precautions	Yes	Yes	Yes	Yes
Contact Precautions	Yes	Yes	Yes	Yes
Private Room	Yes	Yes	Yes; if feasible	Yes; if feasible
Door signage	Yes	Yes	Yes	Yes
Designated or disposable	Yes	Yes	Yes	Yes

Infection Prevention Measure	Long Term Care			
Standard Precautions	Yes	Yes	Yes	Yes
Contact Precautions	Yes	Yes	Yes	No, unless at higher risk of transmission*
Private Room	Yes	Yes	Yes, if feasible	No, unless at higher risk of transmission*
Restricted to Room	Yes	No, unless at higher risk of transmission*	No, unless at higher risk of transmission*	No, unless at higher risk of transmission*
Door signage	Yes	Yes	Yes	No, unless at higher risk of transmission*
Designated or disposable equipment	Yes	Yes	Yes	No, unless at higher risk of transmission*
Enhanced Environmental Cleaning**	Yes	Yes	Yes	No

Visitor Recommendations	Acute and Long Term Care			
Perform hand hygiene often, and always after leaving resident's room.	Yes	Yes	Yes	Yes
Wear gown/gloves if contact with body fluids is anticipated	Yes	Yes	Yes	Yes
Wear gown/gloves if no contact with body fluids is anticipated	No	No	No	No

*Contact precautions should be maintained and every effort made to provide a private room for residents who are at higher risk for transmission, for example, those who are ventilator-dependent, have uncontained incontinence of urine

**Enhanced environmental cleaning should include communications to environmental services staff reinforcing their important role in protecting patients, an audit of cleaning practices, ensuring use of EPA approved disinfectants, and assessing completeness of cleaning