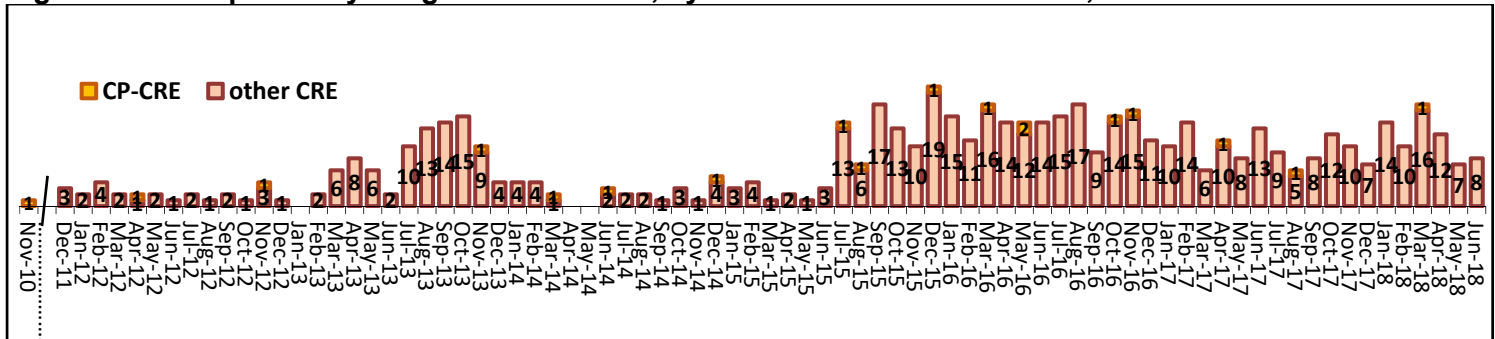


Figure1: CRE reported by Oregon laboratories, by month of culture collection, 2010 – June 2018



### **About carbapenem-resistant *Enterobacteriaceae* (CRE):**

The carbapenems are broad-spectrum antibiotics frequently used to treat severe infections caused by Gram-negative bacteria. Carbapenem resistance in the *Enterobacteriaceae* family emerged as a public health concern over the past decade, as few treatment options remain for some severely ill patients.

For more information about CRE surveillance in Oregon including the specifics of our definition, see <http://public.health.oregon.gov/DiseasesConditions/DiseasesAZ/Pages/disease.aspx?did=108>

**CRE Resistance.** Carbapenem resistance emerges through various mechanisms, including impaired membrane permeability and the production of carbapenemases (enzymes that break down the carbapenems). Carbapenemase-producing CRE (CP-CRE) are associated with rapid spread and require the most aggressive infection control response; however, all CRE call for certain infection control measures, including contact precautions, and should be considered a public health and infection prevention priority.

**CRE Infection.** CRE can cause pneumonia, bloodstream infections, surgical site infections, urinary tract infections, and other conditions, frequently affecting hospitalized patients and persons with compromised immune systems. Infections with CRE often require the use of very expensive antibiotics that may have toxic side effects.

While CRE have spread rapidly throughout the United States, they are still not endemic in Oregon. We hope that we can delay or prevent their spread through active surveillance and infection control.

### **CRE Definition**

In July of 2015, Oregon public health changed its CRE surveillance definition. The current definition is: resistant to any carbapenem including doripenem, ertapenem, imipenem or meropenem using the current M100-S25 CSLI breakpoints. The new definition has been applied to previously reported cases.

### **Epidemiology of CRE in Oregon**

Oregon laboratories have reported 594 cases of infection or colonization with CRE. Two hundred-eighty-three (47%) of the CRE cases were hospitalized at the time of culture collection or within 30 days after collection; three hundred-one (51%) were outpatients and specimens were collected in a variety of locations including clinics, emergency departments, long-term care facilities or home health settings. The setting for specimen collection was unknown for 10 (2%).

Table 1 displays the frequencies of each organism type (genus and species) and anatomical site of culture among these cases.

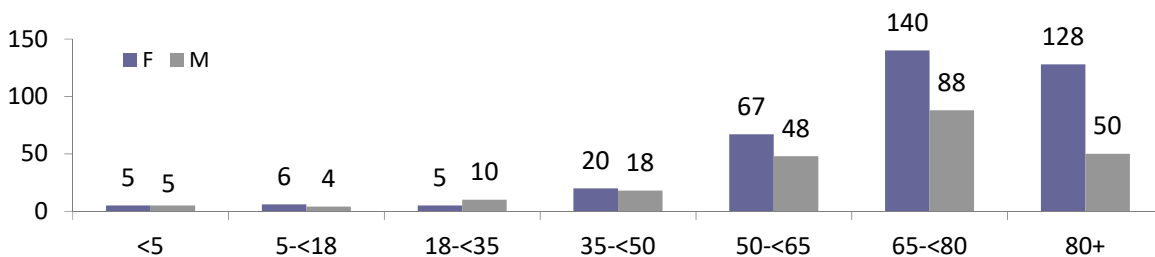
CRE have been isolated from clinical cultures collected from residents of 30 Oregon counties. Figure 2 shows case numbers by age and sex.

Twenty-two carbapenemase producers (CP-CRE) have been identified by Oregon labs. Eighteen of the CP-CRE were from Oregon residents; 11 *Klebsiella pneumoniae* carbapenemase (KPC), 5 New Delhi metallo- $\beta$ -lactamase (NDM), and 2 Oxacillinase-48 (OXA-48) (figure 3). Thirteen of the Oregon CP-CRE cases were from patients with histories of healthcare exposure in other states or out of country.

**Table 1. Organism and anatomical site of culture**

Organism	Anatomical site of culture					Total
	Urine	Blood	Respiratory	Wound	Other	
<i>Enterobacter aerogenes</i>	38	2	4	4	5	53
<i>Enterobacter cloacae</i>	236	14	22	39	11	322
<i>Escherichia coli</i>	60	3	2	9	3	77
<i>Klebsiella pneumoniae</i>	40	4	3	5	3	55
<i>Serratia marcescens</i>	26	2	9	1	1	39
Other	30	1	1	12	4	48
Total	430	26	41	70	27	594

**Figure 2: Oregon cases, (Nov 2010 – June 2018), by age group and sex**



**Figure 3. CP-CRE identified by Oregon laboratories by year**

