

## Community Wide Surveillance for Carbapenem Resistant Organism (CRO) Statistical Report 2020

**Surveillance Definitions:** REPORT DATE (202) For this report, the date of specimen collection is used for case counts by months.

### **Carbapenem Resistant Enterobacteriaceae (CRE)**

Enterobacteriaceae that meets the following criteria:

- Resistant to ANY carbapenem antimicrobial (i.e., MIC of  $\geq 4$  mcg/ml for doripenem, meropenem, or imipenem OR  $\geq 2$  mcg/ml for ertapenem) OR
- Documented to produce carbapenemase

In addition:

- For bacteria that have intrinsic imipenem nonsusceptibility (i.e., *Morganella morganii*, *Proteus spp.*, *Providencia spp.*), resistant to carbapenems other than imipenem is required.

**Carbapenem Resistant *Pseudomonas aeruginosa* (CRPA)** *Pseudomonas aeruginosa* isolated from any body site\* that meets the following criteria:

- Resistant to imipenem, meropenem, or doripenem based on current Clinical and Laboratory Standards Institutes Standards (CLSI) M100 standards ( $\geq 8$  mcg/mL); AND/OR
- Demonstrates production of a carbapenemase by a recognized method (e.g., CarbaNP or Polymerase chain reaction (PCR) or other methods). \*Excluding isolates from patients with cystic fibrosis (CF).

**Carbapenem Resistant *Acinetobacter* (CRA)** *Acinetobacter* isolated from any body site that meets the following criteria:

- Resistant to imipenem, meropenem, or doripenem based on current Clinical and Laboratory Standards Institutes Standards (CLSI) M100 standards; AND/OR
- Demonstrates production of a carbapenemase by a recognized method (e.g. CarbaNP or PCR or other methods).

**Carbapenem Resistant Organisms (CRO)** Any organisms meeting the above definitions for CRE, CRPA, and CRA are considered CRO.

**Carbapenemase Producing Organisms (CPO)** Any organisms producing carbapenemase which is laboratory-confirmed are defined as CPO.

### **Carbapenemase:**

- *Klebsiella pneumoniae* Carbapenemase (KPC)
- Imipenemase metallo-beta-lactamase (IMP)
- New Delhi metallo-beta-lactamase (NDM)
- Verona integron-encoded metallo-beta-lactamase (VIM)
- Oxacillin Carbapenemase (OXA)

**DUPLICATES:** Duplicates are defined as isolates from same patient, same organism, and same source within same year.

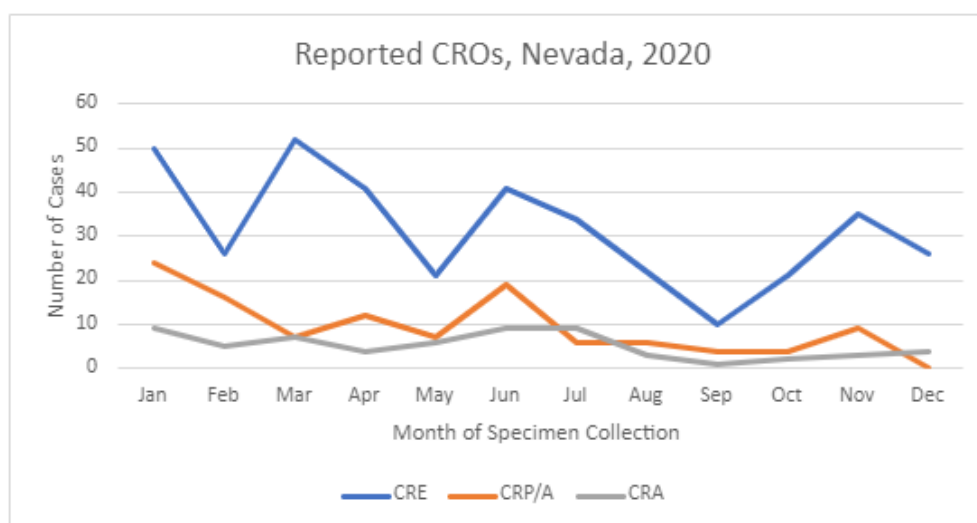
**PATIENT'S RESIDENCY** Patients from out of jurisdiction (OOJ) are included in the surveillance report as long as isolates meet the above surveillance definition

## Major Findings:

**Table1: Reported CRO by Month, 2020**

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CRE	50	26	52	41	21	41	34	22	10	21	35	26	379
CRP/A	24	16	7	12	7	19	6	6	4	4	9	0	114
CRA	9	5	7	4	6	9	9	3	1	2	3	4	62
<b>TOTAL</b>	<b>83</b>	<b>47</b>	<b>66</b>	<b>57</b>	<b>34</b>	<b>69</b>	<b>49</b>	<b>31</b>	<b>15</b>	<b>27</b>	<b>47</b>	<b>30</b>	<b>555</b>

**Figure 1: Reported CRO by Month, 2020**



**Table 1-1: Descriptive Statistics for Reported CRO Cases 2020**

Characteristics		No.	Percent (%)
<b>Age</b>	Median	67	NA
	Minimum	2	NA
	Maximum	98	NA
<b>Gender</b>	Male	352	58%
	Female	254	42%
<b>Specimen Type</b>	Urine	219	38%
	Wound	118	20%
	Respiratory	52	9%
	Rectal	36	6%
	Invasive (blood, cerebrospinal fluid)	36	6%
	Other	117	20%
	Unknown	5	1%
<b>Total</b>		<b>583</b>	<b>100%</b>

## Carbapenemase Producing Organisms (CPO)

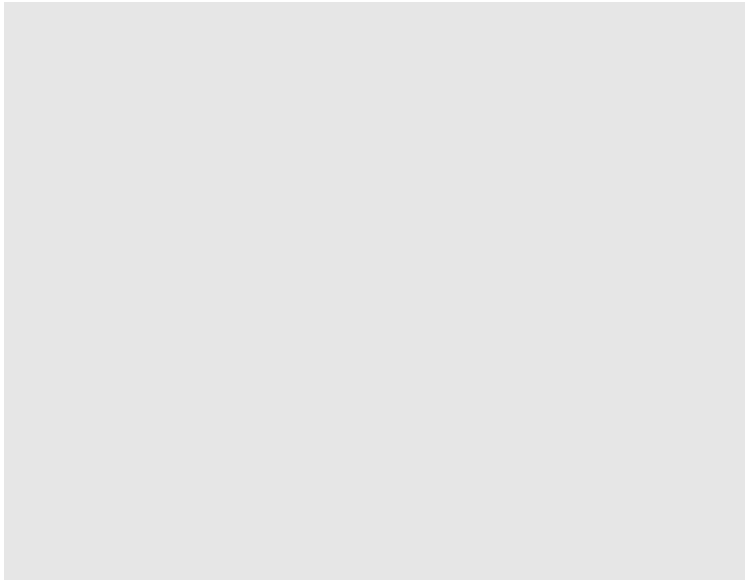
**Table 2: Total CPO cases, 2020**

Resistance Mechanism	No.
NDM	10
VIM	0
KPC	143
OXA-48	1
KPC/NDM	1
<b>Total</b>	<b>155</b>

**Table 2-1: Characteristics of Reported CPO Cases NDM and OXA-48 and characteristics of Dual Mechanism KPC/NDM, 2020**

Month/ Year Reported	Resistance Mechanism	Organism	Colonization/Clinical
January-20	<b>NDM</b>	No organism listed	Clinical
January-20	NDM	<i>Klebsiella pneumoniae</i>	Clinical
February-20	NDM	No organism listed	Colonization
March-20	NDM	<i>Klebsiella pneumoniae</i>	Clinical
March-20	NDM	<i>Escherichia coli</i>	Clinical
March-20	NDM	<i>Klebsiella pneumoniae</i>	Clinical
April-20	NDM	No organism listed	Colonization
May-20	NDM	<i>Klebsiella pneumoniae</i>	Clinical
May-20	NDM	No organism listed	Colonization
May-20	NDM	<i>Klebsiella pneumoniae</i>	Clinical
June-20	KPC/NDM	No organism listed	Colonization
December-20	OXA-48	No organism listed	Clinical

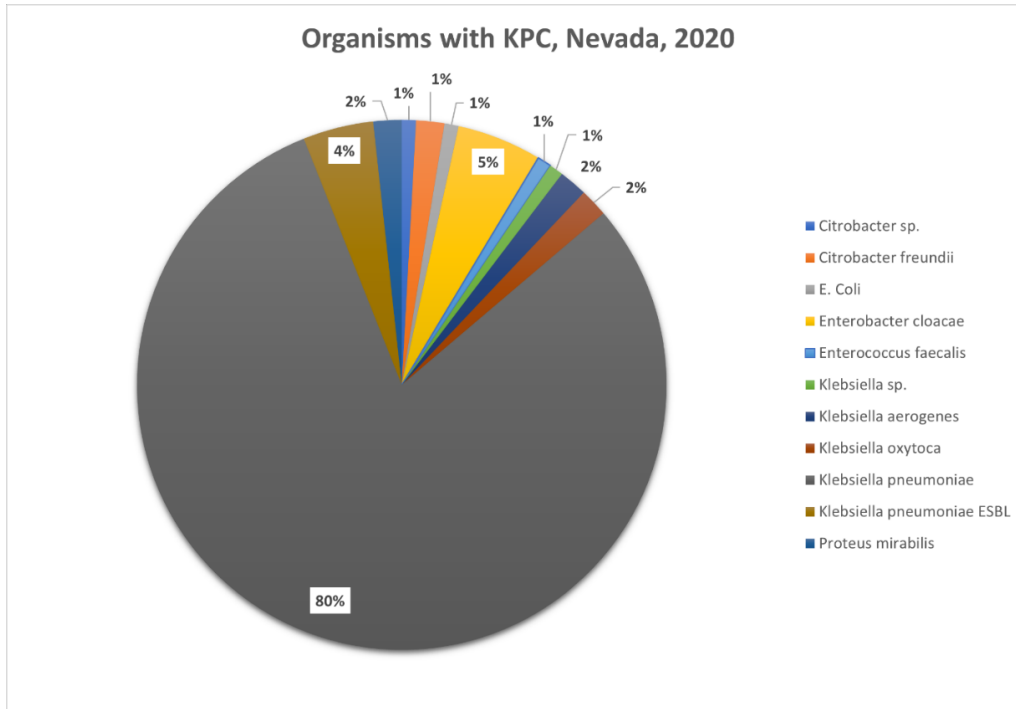
**Figure 2**



OXA-48, NDM, and KPC/NDM cases reported 2020= 12

No VIM reported 2020

**Figure 2-1**



KPC cases reported 2020= 143. KPC/NDM dual mechanism not included in figure

## Carbapenem Resistant Enterobacteriaceae (CRE)

**Table 3: Carbapenem Resistant Enterobacteriaceae (CRE), 2020**

CRE Organisms	No. cases
<i>Citrobacter sp.</i>	1
<i>Citrobacter freundii</i>	4
<i>Escherichia coli</i>	23
<i>Enterobacter hormaechei</i>	0
<i>Enterobacter sp.</i>	0
<i>Enterobacter cloacae</i>	57
<i>Escherichia sp.</i>	12
<i>Klebsiella aerogenes</i>	14
<i>Klebsiella oxytoca</i>	7
<i>Klebsiella pneumoniae</i>	220
<i>Klebsiella variicola</i>	1
<i>Kluyvera</i>	0
<i>Proteus mirabilis</i>	15
<i>Proteus vulgaris</i>	2
<i>Providencia stuartii</i>	10
<i>Serratia</i>	2
<i>Salmonella</i>	1
Enterobacteriaceae	3
<i>Klebsiella sp.</i>	3
<i>Morganella morganii</i>	3
<i>Enterobacter aerogenes</i>	1
<b>Total</b>	<b>379</b>

### Reported Annual Rate of CPO/CRO in Hospitals (2020):

The reported annual rate of CPO/CRO infections in hospitals in Nevada in 2020 is 29.39 per 100,000 population

### Infection prevention practices to prevent transmission of MDROs:

- Follow **Standard Precautions** during all patient encounters in all settings in which healthcare is delivered.
- Implement **Contact Precautions** routinely for all patients infected with target MDROs and for patients that have been previously identified as being colonized with target MDROs.
- Please review additional guidelines provided by the Centers for Disease Control and Prevention on implementation of infection control based on the facility type, patient admission and placement, and enhanced environmental measures at <https://www.cdc.gov/infectioncontrol/guidelines/mdro/recommendations.html>

### Reporting of MDROs

- MDRO cases can be reported to [outbreak@health.nv.gov](mailto:outbreak@health.nv.gov).

## Acknowledgments

This report was written and compiled by Hermella Misiker, MPH and edited by Chidinma Njoku, MHA and Kimisha Causey, MPH, MSW with the Division of Public & Behavioral Health (DPBH) – Office of Public Health Investigations and Epidemiology (OPHIE) Healthcare Associated Infection (HAI) Program.

Special thanks to Washoe County Health District, Nevada State Public Health Laboratory, Southern Nevada Public Health laboratory, and all the healthcare facilities that contributed to this report. This report would not be possible without your support, cooperation and dedication to improve patients' safety in Nevada. For questions regarding this report please contact: The Healthcare Associated Infection Program by email at [DPBHAI@health.nv.gov](mailto:DPBHAI@health.nv.gov).