Community Wide Surveillance for Carbapenem Resistant Organism (CRO) Statistical Report 2019

Surveillance Definitions: REPORT DATE (2019) 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 ≥ 4 mcg/ml for doripenem, meropenem, or imipenem OR ≥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 (≥ 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, 2019

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CRE	39	37	55	42	47	36	34	57	36	46	13	26	468
CRP/A	2	4	1	3	2	3	1	3	11	18	10	4	62
CRA/B	1	0	0	2	2	1	0	1	2	4	2	6	21
TOTAL	42	41	56	47	51	40	35	61	49	68	25	36	551

Figure 1: Reported CRO by Month, 2019

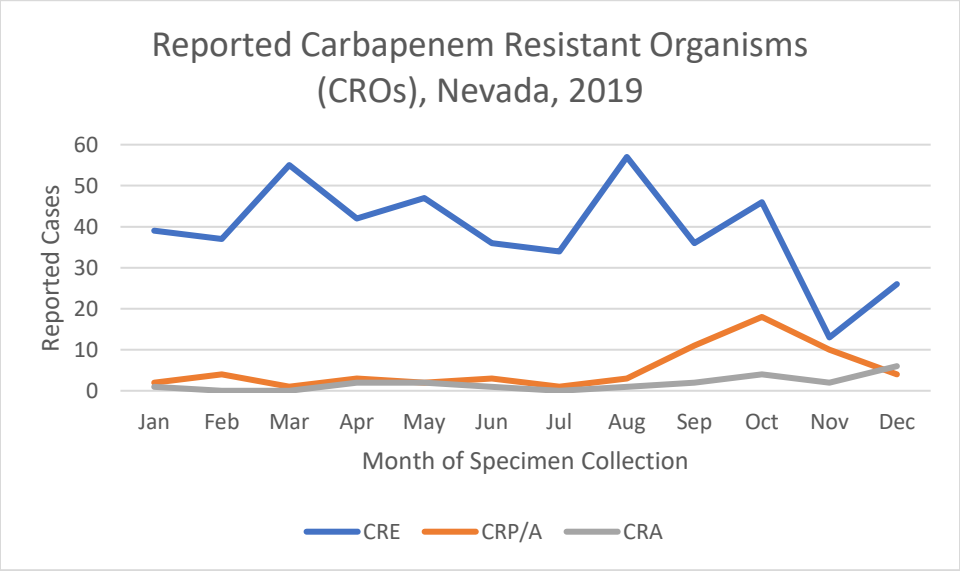


Table 1-1: Descriptive Statistics for Reported CRO Cases, 2019

Characteristics		No.	Percent (%)
Age	Median	70	NA
	Minimum	3	NA
	Maximum	105	NA
Gender	Male	249	52%
	Female	227	48%
Specimen Type	Urine	243	48%
	Wound	66	13%
	Respiratory	37	7%
	Rectal	46	9%
	Invasive (blood, cerebrospinal fluid)	25	5%
	Other	91	18%
	Unknown	3	1%

Total		511	100%

Carbapenemase Producing Organisms (CPO)

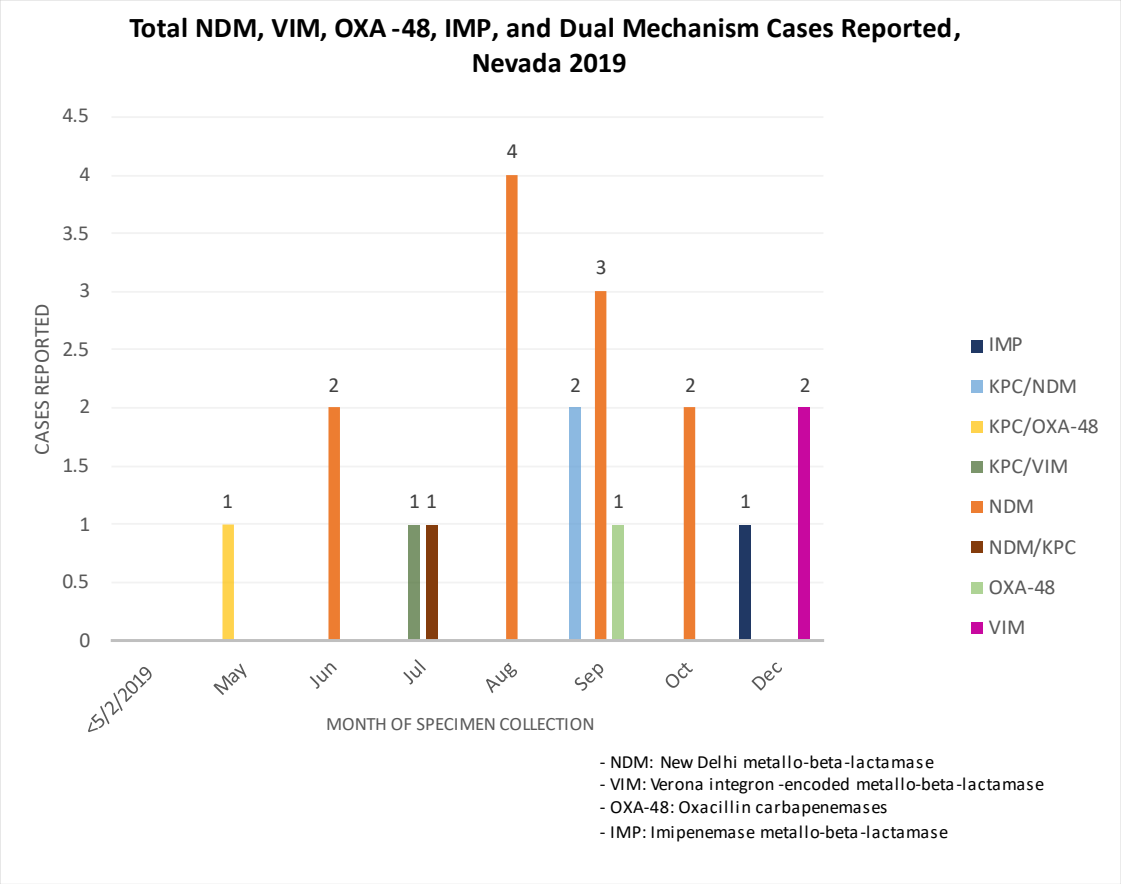
Table 2: Total CPO cases, 2019

Resistance Mechanism	No.
NDM	11
VIM	2
KPC	165
OXA-48	1
IMP	1
KPC/OXA-48	1
KPC/VIM	1
KPC/NDM	3
Total	185

Table 2-1: Characteristics of Reported CPO Cases and Characteristics of Dual Mechanism KPC/NDM, KPC/OXA-48, KPC/VIM, 2019

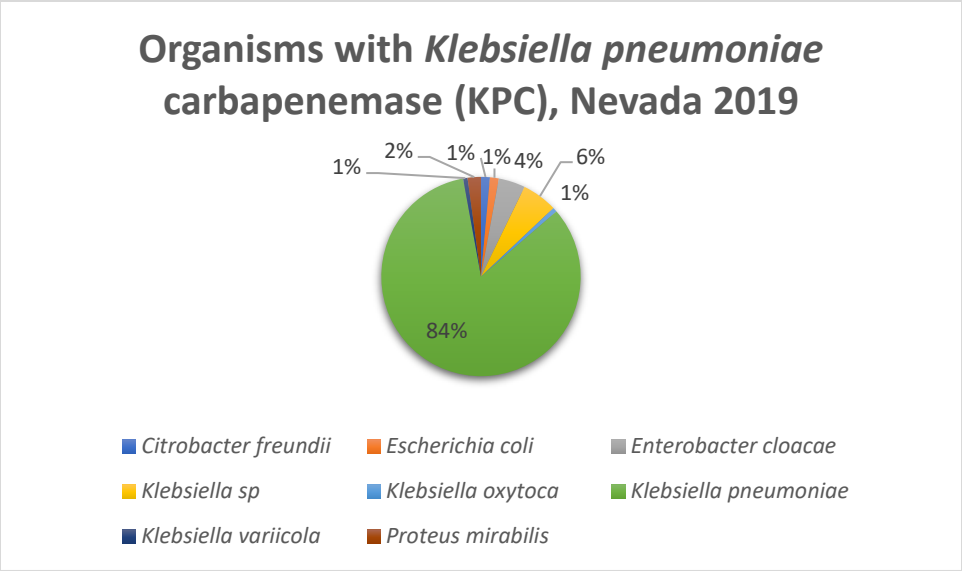
Month/ Year Reported	Resistance Mechanism	Organism	Colonization/Clinical
May-19	KPC/OXA-48	*Klebsiella pneumoniae*	clinical
June-19	NDM	*Klebsiella pneumoniae*	unknown
June-19	NDM	*Klebsiella pneumoniae*	clinical
July-19	NDM/KPC	No organism listed	unknown
July-19	KPC/VIM	No organism listed	unknown
August-19	NDM	*Escherichia sp.*	clinical
August-19	NDM	*Klebsiella pneumoniae*	clinical
August-19	NDM	*Klebsiella pneumoniae*	clinical
August-19	NDM	No organism listed	colonization
September-19	NDM	*Klebsiella pneumoniae*	clinical
September-19	KPC/NDM	No organism listed	colonization
September-19	NDM	*Klebsiella pneumoniae*	clinical
September-19	KPC/NDM	No organism listed	colonization
September-19	OXA-48	*Escherichia coli*	clinical
October-19	NDM	No organism listed	colonization
October-19	NDM	*Enterobacter sp.*	clinical
December-19	VIM	No organism listed	unknown
December-19	VIM	No organism listed	unknown
December-19	IMP	*Klebsiella pneumoniae*	unknown

Figure 2



OXA-48, NDM, VIM, IMP, and dual mechanism cases reported 2019= 20

Figure 2-1



KPC cases reported 2019= 165. KPC/NDM, KPC/VIM, KPC/OXA-48 dual mechanism not included in figure.

Carbapenem Resistant Enterobacteriaceae (CRE)

Table 3: Carbapenem Resistant Enterobacteriaceae (CRE), 2019

CRE Organisms	No. cases
Citrobacter sp.	2
Citrobacter yungae	1
Citrobacter freundii	9
Escherichia coli	29
Enterobacteriacea	6
Enterobacter aerogenes	3
Enterobacter sp.	11
Enterobacter cloacae	85
Escherichia sp.	17
Klebsiella aerogenes	11
Klebsiella oxytoca	2
Klebsiella pneumoniae	215
Klebsiella variicola	1
Proteus mirabilis	14
Proteus penneri	1
Proteus vulgaris	1
Providencia stuartii	10
Serratia marcescens	1
Serratia sp.	5
Klebsiella sp.	41

Morganella morganii	3
Total	468

Reported Annual Rate of CPO/CRO in Hospitals (2019):

The reported annual rate of CPO/CRO infections in hospitals for 2019 was 19.2 per 100000 persons

Links to Antibiograms from Local Health Jurisdiction:

- Southern Nevada Health District (SNHD) : Clark County Antibiogram – Southern Nevada Health District
- Washoe County Health District (WCHD) : Antibiogram (washoecounty.gov)

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.

Acknowledgments

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