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## Introduction

**Background:** New Mexico initiated surveillance for carbapenem-nonsusceptible Enterobacteriaceae (CRE) and *Acinetobacter baumannii* in Bernalillo County in 2013 as part of the Emerging Infections Program (EIP) Multi-site Gram Negative Surveillance Initiative (MuGSI).

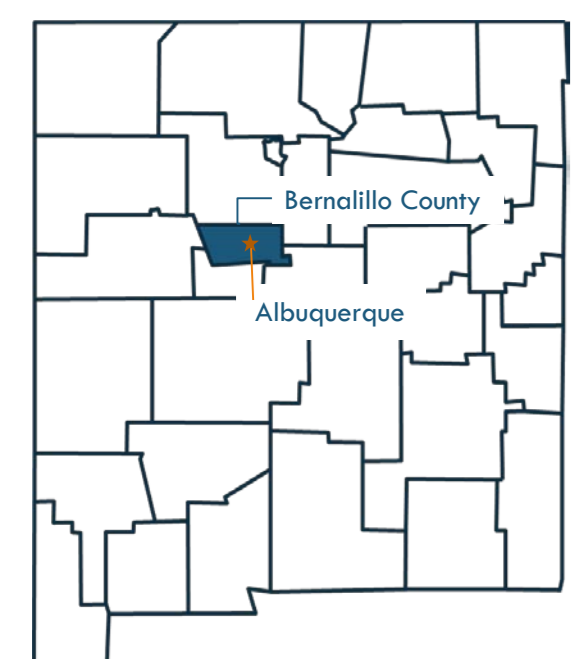
**Methods:** Active, laboratory- and population-based surveillance was conducted in Bernalillo County, NM. We defined CRE as *Escherichia coli*, *Enterobacter* spp, or *Klebsiella* spp nonsusceptible to  $\geq 1$  carbapenem (excluding ertapenem) and resistant to all 3rd generation cephalosporins tested, and CRAB as *A. baumannii* nonsusceptible to  $\geq 1$  carbapenem (excluding ertapenem) isolated from normally sterile sites or urine. Medical record reviews were conducted on incident cases, and a convenience sample of isolates underwent PCR for common carbapenemases at CDC.

## Case Definition

Species	Definition of carbapenem-nonsusceptibility
<i>Escherichia coli</i>	Intermediate or resistant to: imipenem (MIC $\geq 2$ ), meropenem (MIC $\geq 2$ ), or doripenem (MIC $\geq 2$ )
<i>Enterobacter aerogenes</i>	AND
<i>Enterobacter cloacae</i>	AND
<i>Klebsiella pneumoniae</i>	resistant to (if tested): ceftazidime (MIC $\geq 16$ ), ceftriaxone (MIC $\geq 4$ ), and cefotaxime (MIC $\geq 4$ )
<i>Klebsiella oxytoca</i>	
<i>Acinetobacter baumannii</i> *	Intermediate or resistant to: doripenem (MIC $>1$ ) imipenem (MIC $\geq 8$ ), or meropenem (MIC $\geq 8$ )

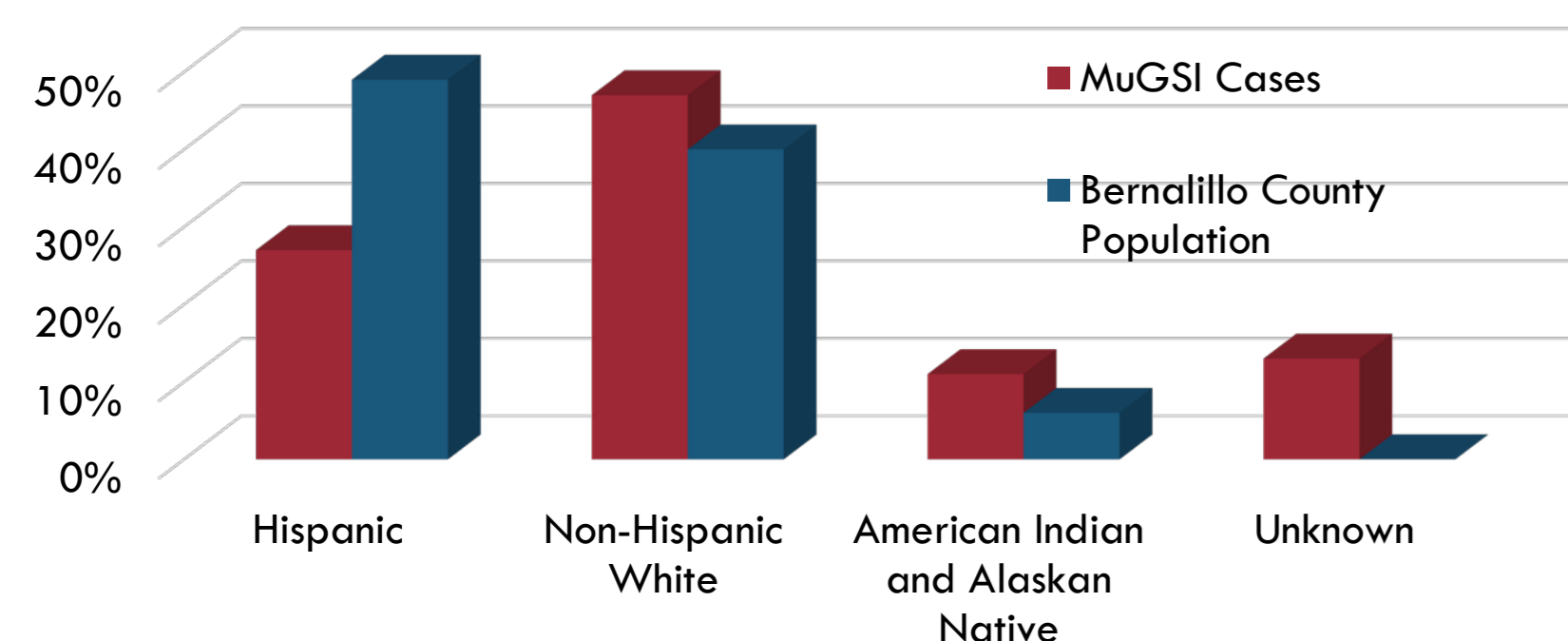
Collected from a normally sterile site or urine, from a resident of Bernalillo County, NM  
\*Includes: *A. baumannii*, *A. baumannii* complex, *A. calcoaceticus*-*baumannii* complex (includes *A. calcoaceticus*)

## Demographics



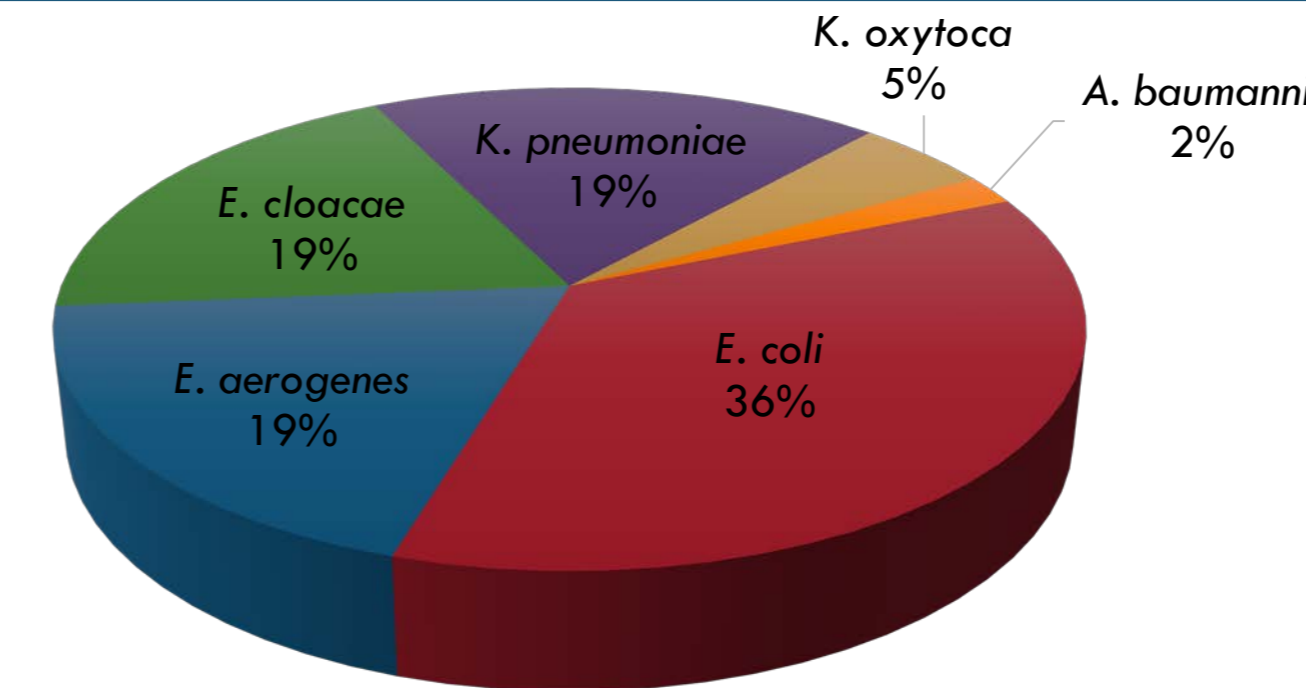
45% aged 65 or older  
73% female  
American Indian and Alaskan Natives and non-Hispanic whites were overrepresented while Hispanics were underrepresented among MuGSI cases compared to Bernalillo County  
Bernalillo County has a 2014 population of 675,551, a third of New Mexico's population

## Race/Ethnicity



## Isolate Characteristics

- January 1, 2014 – December 31, 2015
- 85 isolates met MuGSI criteria
- Culture source:
  - 82 urine
  - 3 blood
- Four KPC-producing organisms identified

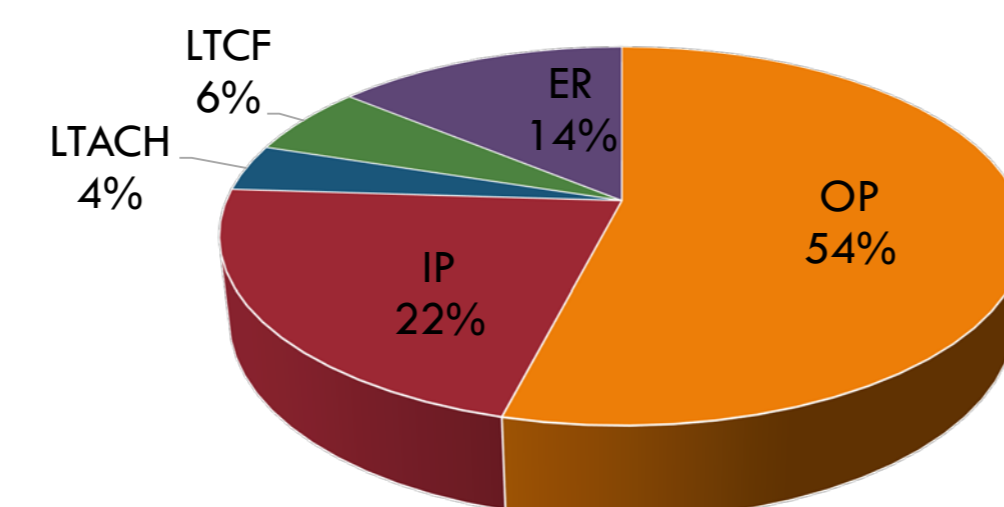


## Results

### Community Onset, Healthcare-Associated CRE

- 67% were collected in an outpatient setting (ER or outpatient clinic)
  - Most had risk factors or relevant healthcare exposures in the prior year

### Location of Culture Collection



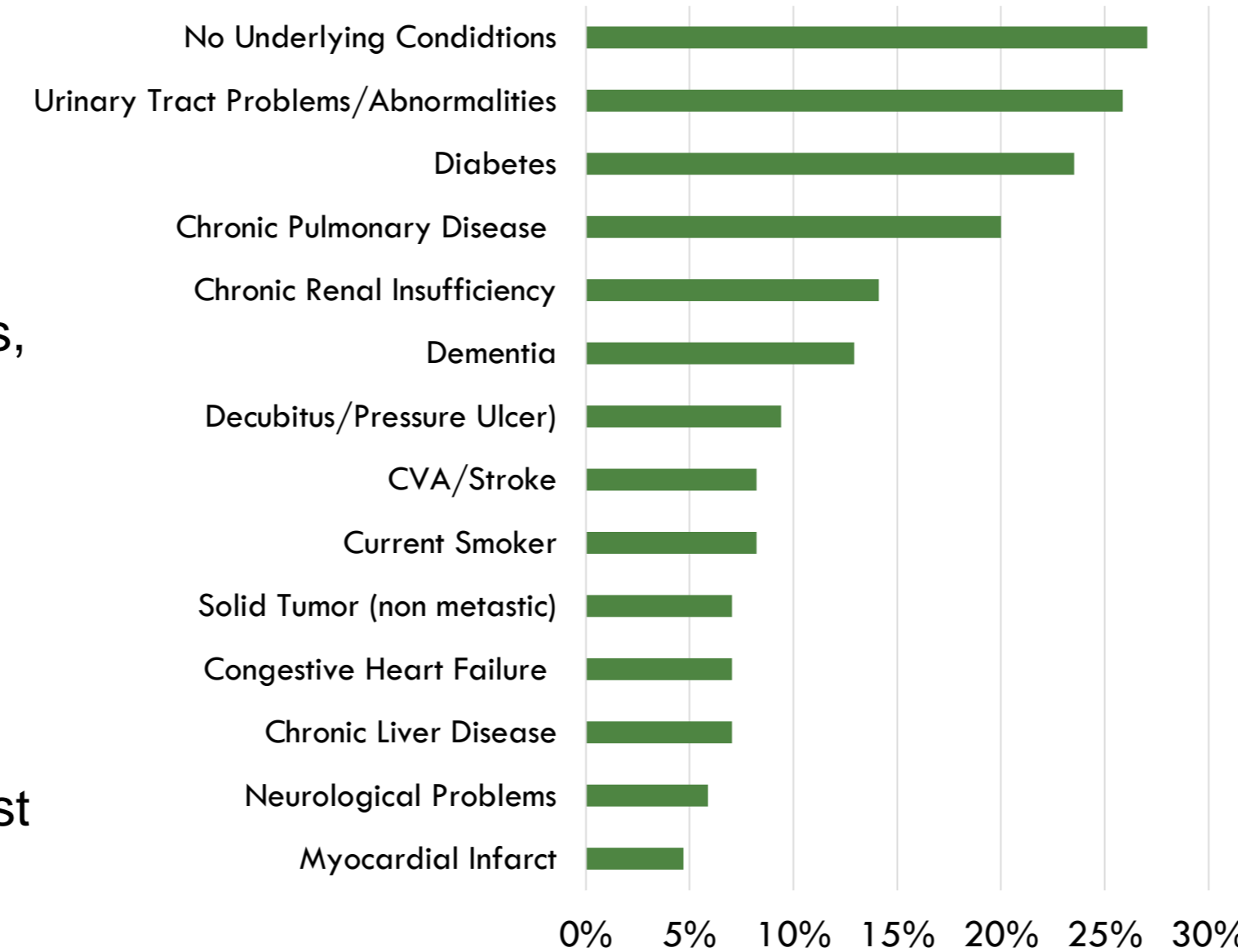
### Risk Factors

- 67% had at least one risk factor related to healthcare exposures, indwelling devices, or travel
- 12% had MuGSI culture collected  $>3$  calendar days after hospital admission
- 71% had at least one underlying condition of interest

### Clinical Characteristics

- 29% of the cases were considered colonized, not infected
- 58% had urinary tract infections
- Six cases were bacteremic
- Peritonitis, pyelonephritis, septic shock also seen
- Outcomes were generally good
- Three deaths

### Underlying Conditions



### Hospitalized Cases

- 29% hospitalized at the time of, or within 30 days after culture.
  - 40% had culture collected 4 or more days after admission
  - Duration of hospitalization ranged from 1 – 217 days
  - Median duration of hospitalization was 8 days
  - 40% were discharged to a LTCF

### In year prior to culture date:

Condition	n (%)
Hospitalization	40 (47)
Surgery	27(32)
LTCF Residence	13 (15)
LTACH Admission	5 (6)
Dialysis	3 (4)
International Travel	1 (1)

### Indwelling Devices within 2 days prior to culture date:

Device	n (%)
Urinary Catheter	25 (29)
Central Venous Catheter	10 (12)
Gastrostomy Tube	6 (7)
Tracheostomy	3 (4)
Nephrostomy Tube	2 (2)
ET/NT Tube	2 (2)
Other Indwelling Device	4 (5)

## Carbapenemase-producing CRE (CP-CRE)

Four KPC-producing organisms identified, all from urine cultures

Demographics	n (%)	CP-CRE Organisms	n (%)
Female	4 (100)	<i>E. aerogenes</i>	1 (25)
Age 60-70	4 (100)	<i>E. cloacae</i>	1 (25)
Hispanic	1 (25)	<i>K. pneumoniae</i>	2 (50)
Non-Hispanic White	2 (50)	<b>Location of Culture Collection</b>	
American Indian and Alaskan Native	1 (25)	Outpatient	2 (50)
		LTCF	1 (25)
		LTACH	1 (25)

In year prior to culture date:	CRE n (%)	CP-CRE n (%)	P-value*
Hospitalization	36 (45)	4 (100)	0.045
LTCF Residence	10 (12)	3 (75)	0.011
CRE Diagnosis	2 (3)	2 (50)	0.011

\*Calculated using Fisher's exact test

## Conclusions

While two-thirds of cultures were collected in an outpatient setting, most cases had substantial prior healthcare exposures.

$<5\%$  of CRE were found to produce a carbapenemase. CP-CRE has not been found to be widespread in Bernalillo County, NM.

Individuals with CP-CRE were significantly more likely to have been hospitalized, resided in a LTCF, or had a distinct CRE culture in the prior year.

Most cases had prior stays in acute- or long-term care facilities. Among inpatients, 40% were discharged to a long-term care facility. Inter-facility communication and coordinated prevention and control efforts are essential to mitigating transmission of these organisms.

## Contact Information

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