

Fig. 1.

**Presentation Type:**

Top Rated Posters

**Characteristics Associated with Death in Patients with Carbapenem-Resistant *Acinetobacter baumannii*, United States, 2012–2017**

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**Background:** Carbapenem-resistant *Acinetobacter baumannii* (CRAB) is an important cause of healthcare-associated infections with limited treatment options and high mortality. To describe risk factors for mortality, we evaluated characteristics associated with 30-day mortality in patients with CRAB identified through the Emerging Infections Program (EIP). **Methods:** From January 2012 through December 2017, 8 EIP sites (CO, GA,

MD, MN, NM, NY, OR, TN) participated in active, laboratory-, and population-based surveillance for CRAB. An incident case was defined as patient's first isolation in a 30-day period of *A. baumannii* complex from sterile sites or urine with resistance to  $\geq 1$  carbapenem (excluding ertapenem). Medical records were abstracted. Patients were matched to state vital records to assess mortality within 30 days of incident culture collection. We developed 2 multivariable logistic regression models (1 for sterile site cases and 1 for urine cases) to evaluate characteristics associated with 30-day mortality. **Results:** We identified 744 patients contributing 863 cases, of which 185 of 863 cases (21.4%) died within 30 days of culture, including 113 of 257 cases (44.0%) isolated from a sterile site and 72 of 606 cases (11.9%) isolated from urine. Among 628 hospitalized cases, death occurred in 159 cases (25.3%). Among hospitalized fatal cases, death occurred after hospital discharge in 27 of 57 urine cases (47.4%) and 21 of 102 cases from sterile sites (20.6%). Among sterile site cases, female sex, intensive care unit (ICU) stay after culture, location in a health-care facility, including a long-term care facility (LTCF), 3 days before culture, and diagnosis of septic shock were associated with increased odds of death in the model (Fig. 1). In urine cases, age 40–54 or  $\geq 75$  years, ICU stay after culture, presence of an indwelling device other than a urinary catheter or central line (eg, endotracheal tube), location in a LTCF 3 days before culture, diagnosis of septic shock, and Charlson comorbidity score  $\geq 3$  were associated with increased odds of mortality (Fig. 2). **Conclusion:** Overall 30-day mortality was high among patients with CRAB, including patients with CRAB isolated from urine. A substantial

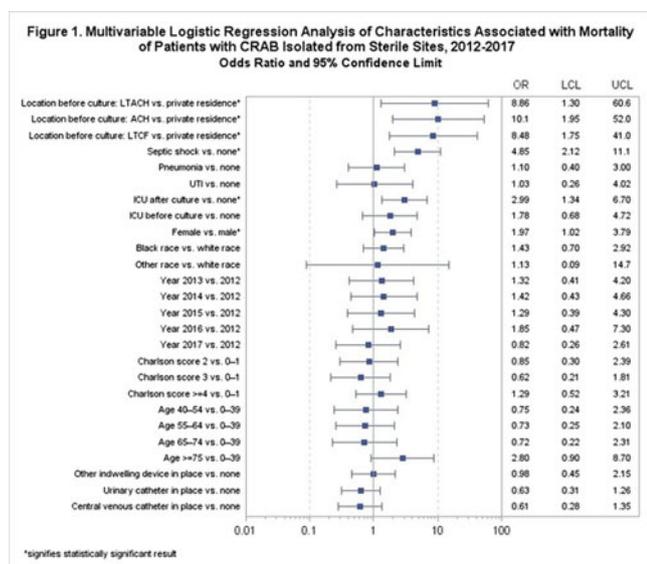


Fig. 1.

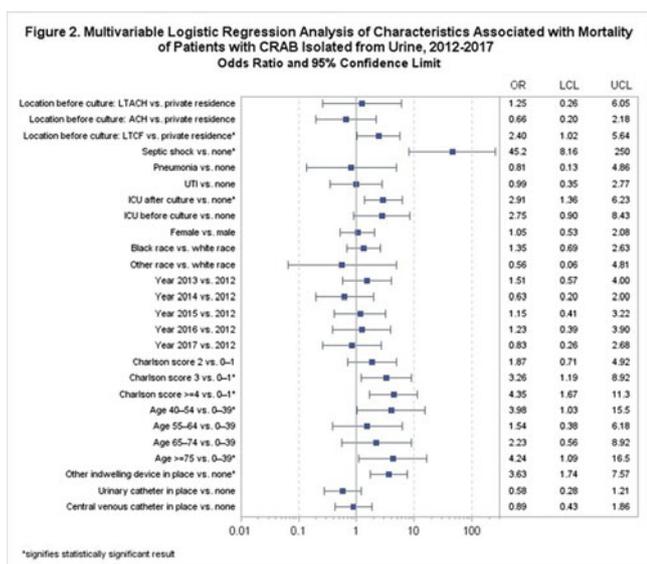


Fig. 2.

fraction of mortality occurred after discharge, especially among patients with urine cases. Although there were some differences in characteristics associated with mortality in patients with CRAB isolated from sterile sites versus urine, LTCF exposure and severe illness were associated with mortality in both patient groups. CRAB was associated with major mortality in these patients with evidence of healthcare experience and complex illness. More work is needed to determine whether prevention of CRAB infections would improve outcomes.

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## Presentation Type:

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## Characteristics Associated With Invasive *Staphylococcus aureus* Infection Rates in Nursing Homes, Emerging Infections Program

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**Background:** Most invasive methicillin-resistant *Staphylococcus aureus* (iMRSA) infections have onset in the community but are associated with healthcare exposures. More than 25% of cases with healthcare exposure occur in nursing homes (NHs) where facility-specific iMRSA rates vary widely. We assessed associations between nursing home characteristics and iMRSA incidence rates to help target prevention efforts in NHs. **Methods:** We used active, laboratory- and population-based surveillance data collected through the Emerging Infections Program during 2011–2015 from 25 counties in 7 states. NH-onset cases were defined as isolation of MRSA from a normally sterile site in a surveillance area resident who was in a NH within 3 days before the index culture. We calculated MRSA incidence (cases per NH resident day) using Centers for Medicare & Medicaid Services (CMS) skilled nursing facility cost reports and described variation in iMRSA incidence by NH. We used Poisson regression with backward selection, assessing variables for collinearity, to estimate adjusted rate ratios (aRRs) for NH characteristics (obtained from the CMS minimum dataset) associated with iMRSA rates. **Results:** Of 590 surveillance area NHs included in analysis, 89 (15%) had no NH-onset iMRSA infections. Rates ranged from 0 to 23.4 infections per 100,000 resident days. Increased rate of NH-onset iMRSA infection occurred with increased percentage of residents in short stay  $\leq 30$  days (aRR, 1.09), exhibiting wounds or infection (surgical wound [aRR, 1.08]; vascular ulcer/foot infection [aRR, 1.09]; multidrug-resistant organism infection [aRR, 1.13]; receipt of antibiotics [aRR, 1.06]), using medical devices or invasive support (ostomy [aRR, 1.07]; dialysis [aRR, 1.07]; ventilator support [aRR, 1.17]), carrying neurologic diagnoses (cerebral palsy [aRR, 1.14]; brain injury [aRR, 1.1]), and demonstrating debility (requiring considerable assistance with bed mobility [aRR, 1.05]) (Table). iMRSA rates decreased with increased percentage of residents receiving influenza vaccination (aRR, 0.96) and with the presence of any patients in isolation for any active infection (aRR, 0.83). **Conclusions:** iMRSA incidence varies greatly across nursing homes, with many NH patient and facility characteristics associated with NH-onset iMRSA rate differences. Some associations (short stay, wounds and infection, medical device use and invasive support) suggest that targeted interventions utilizing known strategies to decrease transmission may help to reduce infection rates, while others (neurologic diagnoses, influenza vaccination, presence of patients in isolation) require further exploration to determine their role. These findings can help identify NHs in other areas more likely to have higher rates of NH-onset iMRSA who could benefit from interventions to reduce infection rates.

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