Infections of carbapenem-resistant Gram-negative pathogens such as A. baumannii, P. aeruginosa, K. pneumoniae, and E. coli are considered a global health threat. Although recent reports have emphasized the rapid spread of CREs, there is some recognition that the non-fermenters, A. baumannii and P. aeruginosa, have a significant impact on morbidity and mortality. Shingofi conducted a retrospective study using the Premier Healthcare Database to assess how all CR Gram-negative bacterial infections, not just CRE infections, had changed between 2010 and 2015 in US hospitals.

**Study Objectives**

- Estimate the change in CR Gram-negative bacteria infections by pathogen over the years.
- Estimate crude mortality due to CR Gram-negative bacteria infections by pathogen and site of infection.

**Data Source**

Licensed 2010-2015 Premier Research Database contains:
2. Anonymized patient-level test results including specimen site, pathogen, drug susceptibility and others from 180 US hospitals.

**Study Design**

This study identified hospitalized patients with four Gram-negative bacteria infections based on hospital microbiology data and hospital discharge data.

The following process was used to identify eligible cases:
1. From Oct 1, 2010 to Sept 30, 2015, the proportion of non-fermenters (A. baumannii and P. aeruginosa) identified from the Premier Healthcare Database. CR and non-CR positive for the four Gram-negative bacteria infections by pathogen.

**Results**

- **Crude mortality rate** (CR vs. non-CR) was 3.6% to 6.8% and 0.3% to 0.4%, respectively.
- Among patients who died with CRE infections, 23.4% had A. baumannii and 55.9% had P. aeruginosa (Table 3).

**Statistical Analysis**

Descriptive statistics were used to present n and % for categorical variables.

**Discussion**

The spread of carbapenem resistance in carbapenem-resistant bacteria infections based on hospital microbiology data and hospital discharge data. The following process was used to identify eligible cases.

- Any specimen with positive result for A. baumannii, P. aeruginosa, K. pneumoniae, or E. coli and carbapenem susceptibility test by using one or more drugs (doripenem, imipenem, meropenem or ertapenem (for E. coli or K. pneumoniae)) was selected.
- Infection site, where specimen was collected, was categorized as blood, respiratory, urinary, or other.
- CR was defined as resistant or intermediate to any of carbapenem tested.

A. baumannii and P. aeruginosa accounted for a far greater number of CR infections than K. pneumoniae and E. coli. This trend was consistent over all pathogens.

**Conclusions**

- The rate of CR among A. baumannii had declined from a peak in 2011.
- CR infections were associated with higher crude mortality rates (i.e., not adjusted for other patient factors). When considering the disease burden of CRE infections, A. baumannii and CR P. aeruginosa are the organisms of greatest impact.

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**References**