

O0050 **Contributing factors to clinical and economic outcomes in patients with carbapenem non-susceptible Gram-negative respiratory infections**

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Background: Identifying contributing factors to clinical and economic burden due to carbapenem non-susceptible (CNS) Gram-negative infections is important. We explored patient and hospital-level drivers for worse outcomes in CNS respiratory infections using data from 78 US hospitals.

Materials/methods: Electronic microbiological and administrative data (1 January 2013-30 September 2015) from the BD Insights Research Database (Becton, Dickinson & Co., Franklin Lakes, NJ) were analyzed. Non-duplicate, respiratory, Gram-negative isolates were considered to be carbapenem non-susceptible (CNS) if they tested as resistant/intermediate to imipenem, meropenem, doripenem, or ertapenem. A number of potential predictors (age, sex, infection onset, principal diagnosis, pathogen, hospital characteristics [teaching status, size, region], clinical severity [ALaRMS score, prior hospitalization within 90 days, mechanical ventilation (MV)/intensive care unit (ICU) status], payer) of outcomes (mortality, 30-day readmissions, length of stay [LOS], cost per case, balance per case [payment minus cost]) were examined using the generalized linear mixed models (GLMM). Significant predictors were identified based on statistical significance of variables and model goodness-of-fit criteria.

Results: 1488 CNS respiratory cases were identified (43.6% female, 35.7% ≥65 years, 36.4% hospital-onset, 71.8% *Pseudomonas aeruginosa*). The overall mortality rate was 13.7%; readmissions: 20.6%; LOS: mean 20 days (SD=27), median 13 days (IQR: 7, 22); cost per case: mean \$54,158 (SD=\$98,312), median \$22,606 (IQR: \$12,015, \$52,684); balance: mean -\$139 (SD=\$92,329), median -\$1,461 (IQR: -\$13,039, \$7,589). Our models showed that hospital-onset infection, polymicrobial infection, MV/ICU status, higher clinical severity score, age, and principal diagnosis were significant predictors for multiple outcomes (mortality, LOS, cost). Hospital-onset (vs. community-onset) infections were associated with significantly higher mortality (OR: 2.35 [95%CI: 1.60, 3.45]), LOS (23.3 days [95%CI: 20.4, 26.7] vs. 9.5 days [95%CI: 8.4, 10.8]), cost (\$73,921 (95%CI: \$56,900, \$96,034) vs. \$24,691 (95%CI: \$20,582, \$29,621) (all p<0.0001), and balance (-\$20,460 [95%CI: -\$27,269, -\$13,651] vs. -\$11,031 [95%CI: -\$18,205, -\$3857]; p=0.0081). Other key predictors were >1 prior admission for 30-day readmissions and balance, and payer type (Medicare/Medicaid) for balance.

Conclusions: CNS respiratory infections have a considerable clinical and economic burden. Patients with hospital-onset infections, polymicrobial infections, higher clinical severity, or mechanically ventilated or ICU-treated patients may contribute more to the burden faced by acute care hospitals.