
Carbapenem Antibiotics for Nosocomial Pneumonia



Evidence from previous studies suggests that the treatment of hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) with empiric carbapenems is associated with lower mortality rates. However, it has also been reported that the use of carbapenems results in higher rates of clinical failure for pseudomonal pneumonia.

This meta-analysis is an updated report with sensitivity analyses and meta-regression. The goal of the researchers is to understand the impact of carbapenem use in HAP and VAP and to determine the efficacy of carbapenems for empiric treatment of nosocomial pneumonia.

Researchers searched databases for randomised controlled studies that evaluated treatment for HAP and/or VAP, as well as studies that also compared carbapenem vs non-carbapenem regimens. The primary outcome of the study was all-cause mortality, while secondary outcomes included subgroup stratification and resistance development. Overall, 20 trials that enrolled 5,489 patients were included in this analysis.

Findings from the study show that carbapenem use had a risk ratio of 0.84 for mortality. When stratified according to VAP proportion, risk ratios were 0.95 for <33%, 0.78 for 33-66% and 0.81 for >66%. When stratified according to severity, groups with acute physiology and chronic health evaluation II scores <14 and between 14 and 17 showed a mortality benefit. No association was observed between *Pseudomonas* prevalence and mortality. Researchers observed a trend towards developing resistance with carbapenem use.

Overall, these findings show that carbapenem-based empiric regimens are associated with lower mortality rates compared with non-carbapenems. No mortality effect was observed in trials with high disease severity, and there was no association with *Pseudomonas*. The mortality difference was observed mainly in studies that used ceftazidime as control. The researchers report a trend toward increasing resistance associated with carbapenems.

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