

Clinical and Microbiologic Efficacy and Safety of Imipenem Cilastatin Relebactam in Complicated Infections: A Meta-analysis

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Abstract : Background: Antimicrobial resistance is on the rise. The use of redundant and inappropriate antibiotics is contributing to recurrent infections and resistance. Newer antibiotics with more robust coverage for gram-negative bacteria are in great demand for complicated urinary tract infections (cUTIs), complicated intra-abdominal infections (cIAIs), hospital-acquired bacterial pneumonia (H.A.B.P.), and ventilator-associated bacterial pneumonia (V.A.B.P.). Objective: We performed this meta-analysis to evaluate the efficacy and safety profile of a new antibiotic, Imipenem/cilastatin/relebactam, compared to other broad-spectrum antibiotics for complicated infections. Search Strategy: We conducted a systemic review search on PubMed, Embase, and Central Cochrane Registry. Selection Criteria: We included randomized clinical trials (R.C.T.s) with the standard of care as comparator arm with Imipenem/cilastatin/relebactam as intervention arm. Analysis: For continuous variables, the mean difference was used. For discrete variables, we used the odds ratio. For effect sizes, we used a confidence interval of 95%. A p-value of less than 0.05 was used for statistical significance. Analysis was done using a random-effects model irrespective of heterogeneity. Heterogeneity was evaluated using the I2 statistic. Results: The authors observed similar efficacy at clinical and microbiologic response levels on early follow-up and late follow-up compared to the established standard of care. The incidence of drug-related adverse events, serious adverse events, and drug discontinuation due to adverse events were comparable across both groups. Conclusion: Imipenem/cilastatin/relebactam has a non-inferior safety and efficacy profile compared to peer antibiotics to treat severe bacterial infections (cUTIs, cIAIs, H.A.B.P., V.A.B.P.).

Keywords : bacterial pneumonia, complicated intra-abdominal infections, complicated urinary tract infection, Imipenem, cilastatin, relebactam

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