

## Abstract

**Background:** Resistant bacterial infections are associated with high mortality and huge economic burdens. Ceftolozane/Tazobactam (CTZ/TAZ) revealed efficacy in patients with ventilated-hospital-acquired bacterial pneumonia (vHABP/VABP) comparable to Meropenem (MEPM) in ASPECT-NP study. One cost-effectiveness analysis in the U.S. found that CTZ/TAZ was cost-effective, but no Japanese studies have been conducted. The objective of this study was to assess the cost-effectiveness of CTZ/TAZ compared with MEPM for patients with vHABP/VABP from the perspective of the Japanese public healthcare payer.

**Methods:** A Markov model was developed to estimate costs and quality-adjusted life-years (QALYs) and to calculate the incremental cost-effectiveness ratio (ICER) associated with CTZ/TAZ and MEPM in the treatment of patients with vHABP/VABP. Clinical outcomes were based on the ASPECT-NP study, costs were based on Japanese medical service fees in 2022, and utilities were based on published data. One-way sensitivity analyses were conducted to identify key drivers of the ICER.

**Results:** CTZ/TAZ had increased total costs by ¥424,731.22 and increased QALYs by 0.17, resulting in an ICER for CTZ/TAZ compared with MEPM of ¥2,548,738.11 per QALY gained.

**Conclusion:** CTZ/TAZ provided a better health outcome compared with MEPM, which led to a reduction of hospital resources, and resulted in a cost-effectiveness alternative to MEPM in vHABP/VABP in Japan.

**Keywords:** Ceftolozane/Tazobactam, Meropenem, vHABP/VABP