

## What's the cost? Informing antimicrobial treatment of inpatients with economic evidence

**C**osts are an important consideration in discussions among decision makers, especially when issues involve incorporating expensive technologies or inactivating obsolete ones.<sup>1</sup> In this regard, the number of published health economic evaluations has been progressively increasing, supporting decisions on health care, public policies and decision-making criteria.<sup>1</sup> In developed countries, reviews of economic evidence have significantly impacted health policy formulation.<sup>2</sup> They provide more robust evidence through systematic reviews of economic evaluations that are being carried out, aiming to generate an efficient toolkit to foment evidence-based informed health care.<sup>3</sup>

High-quality systematic reviews of economic evaluations are fundamental for improving healthcare management, as they are tools that translate scientific research findings, provide explicit recommendations and support evidence-based decision-making.<sup>4,5</sup> However, some of these systematic reviews of economic evaluations have been undertaken without adherence to guidelines, often leading to methodological errors and reports that are not transparent.<sup>4,5</sup> Quality in the conduct of these systematic reviews and transparency in the reporting of findings are key requirements.<sup>3</sup> If robust, these enable the replication of the reviews, provide transferability of results and may contribute to the acceptance or rejection of economic evidence in decision-making.<sup>3</sup>

The absence of these factors augments many arguments raised against systematic reviews of economic evaluations, based on the view that they are unlikely to yield either robust or scientific results, and are thus not valuable.<sup>4,6</sup>

The challenges in conducting systematic reviews of economic evaluations are apparent due to differences in context and location, target population, analysis perspective, comparators, time horizon, discount rates, effectiveness measures, cost estimates, currency, analysis models, sensitivity analyses and assumptions. In addition, challenges arise during the drafting, evaluating and synthesizing of evidence, and when facilitating the understanding of the results by non-specialist professionals.<sup>3,6</sup> To facilitate the conduct of systematic reviews of economic

evaluations, a tool has been developed worldwide for summarizing economic evaluations in a systematic manner.<sup>3</sup> The methodology recommended by JBI relies on summarizing the results of the review using a narrative summary, a tabular approach and a dominance ranking matrix.<sup>6</sup>

In this issue of the *JBI Database of Systematic Reviews and Implementation Reports*, we present a systematic review of economic evidence on the antimicrobial treatment of inpatients with carbapenem-resistant *Klebsiella pneumoniae* (CRKP) infection.<sup>7</sup> Carbapenemases are beta-lactamases that are resistant to all beta-lactam antibiotics. Patients infected with CRKP have a 30-day mortality rate of over 40%, and there is no gold standard for treatment.<sup>8</sup>

Antimicrobials represent a particular class of medicines that have a significant impact on health spending.<sup>9</sup> CRKP can represent up to 70% of nosocomial infections; the direct cost of drug treatment per patient infected has been conservatively estimated at nearly US\$4100, with approximately 60% of costs incurred during the infection period.<sup>9</sup>

In light of this, cost-effectiveness studies are important for evaluating both the cost and effectiveness of viable alternative treatments.<sup>3,4</sup> Our systematic review evaluated the cost-effectiveness of 16 antimicrobials for the treatment of CRKP infection. The results demonstrated that different antimicrobials can be a cost-effective treatment for CRKP infections,<sup>7</sup> which is justified due to the paired comparison of the antimicrobials presented in the dominance ranking matrix.

Systematic reviews of economic evaluations can be used to support clinical decisions that enable choices of treatments to be made, based on effectiveness and cost, with the aim of ensuring the sustainability of the health system.<sup>4-6</sup> The use of a clinical protocol based on systematic reviews of economic evaluations should be easily adapted to a variety of circumstances, such as the variable purchase price of drugs, coinfections with other bacteria, or different indications for hospitalization.<sup>4-6</sup> Health services must provide the best treatment available according to the willingness of each institution to pay.<sup>3</sup>

In the global scenario, especially in low-income and lower middle-income countries where public system managers are responsible for developing national health protocols, the systematic and transparent use of evidence – including economic evidence – is critical to decision making, once the context, effectiveness, costs, feasibility of implementation and equity in health are considered.<sup>10</sup>

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