DETERMINING THE BURDEN OF CARBAPENEM-RESISTANT GRAM-NEGATIVE INFECTIONS IN SPAIN USING MULTICRITERIA DECISION ANALYSIS

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OBJECTIVE

- To determine the epidemiological and economic burden of carbapenem-resistant gram-negative (CRGN) infections in Spain using Multi-Criteria Decision Analysis (MCDA).

METHODS

- A multi-disciplinary panel of experts in infectious diseases and trained in MCDA methodology assessed the burden of CRGN in Spain.
- Adapted Evidence and VALUE: Impact on Decision Making (EVIDEM) framework to burden of health problems was used[1].
- The framework was composed of 13 quantitative and qualitative criteria related to the health problem. These were: Clinical burden of the health problem (1), Unmet needs (2), Efficacy/effectiveness of treatments (3), Safety/tolerability of treatments (4), Health related quality of life associated with treatments (5), Type of therapeutic benefit (6), Economic burden of the health problem: direct costs (7), Economic burden of the health problem: indirect costs (8), Quality of evidence (9), Clinical practice guidelines (10), Guidelines and scope of the healthcare system and priority of access (11), Specific interests (12), System's capacity to address the health problem (13).
- A literature review of each criteria was performed for the identification, analysis, synthesis, and reporting of evidence and structured on an EVIDEM matrix.
- First, panelists ranked the importance of each criterion using an ordinal scale of 5 points (1, not important; 5 : very important). Then, scored the criteria according to the burden of CRGN infections. Finally, the value contribution of each criteria was calculated weighing the importance by the scoring of each criteria.

RESULTS

- The multidisciplinary panel was composed of 1 preventive medicine specialist, 1 specialist in intensive medicine, 1 infectious diseases specialist, 1 microbiologist, 1 clinical pharmacologist, 2 hospital pharmacists and 2 regional and local health managers.
- The criteria ranked as more important (Figure 1) by participants were: "Efficacy/effectiveness of treatments" (4.89±0.3), "Clinical burden of the health problem" (4.78±0.4) and "Type of therapeutic benefit" (4.56±0.5).
- Based on the criteria scoring results (Figure 2), CRGN infections were considered a health problem with a high clinical burden (4.89±0.3) and with many unmet needs (4.44±0.5). Besides, current treatments were considered not effective enough (2.55±0.7).
- CRGN infections were considered to have a high economic impact measured in direct costs (3.66±1.2). On the other hand, available evidence on the health problem was considered insufficient (1.55±0.9) and the system's capacity to address the health problem was considered limited (2.11±1.2).
- Value contribution of burden of CRGN infections was driven by the clinical and economic burden of the health problem.

Figure 1. Weighting of criteria by relative importance for the assessment of the burden of CRGN

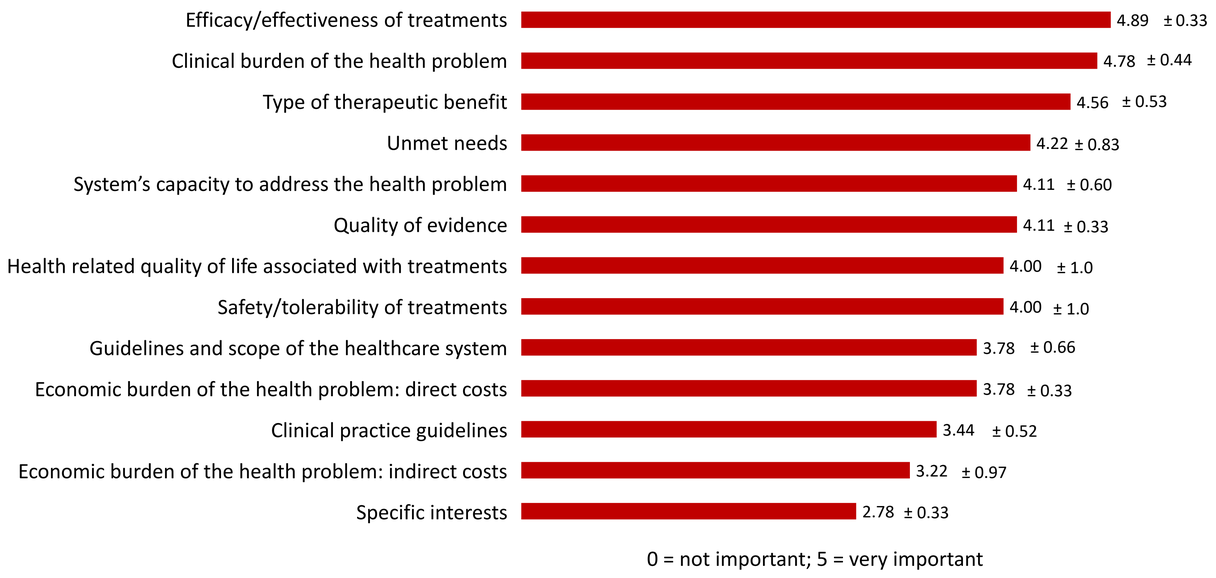


Figure 2. Scoring of criteria for the assessment of the burden of CRGN

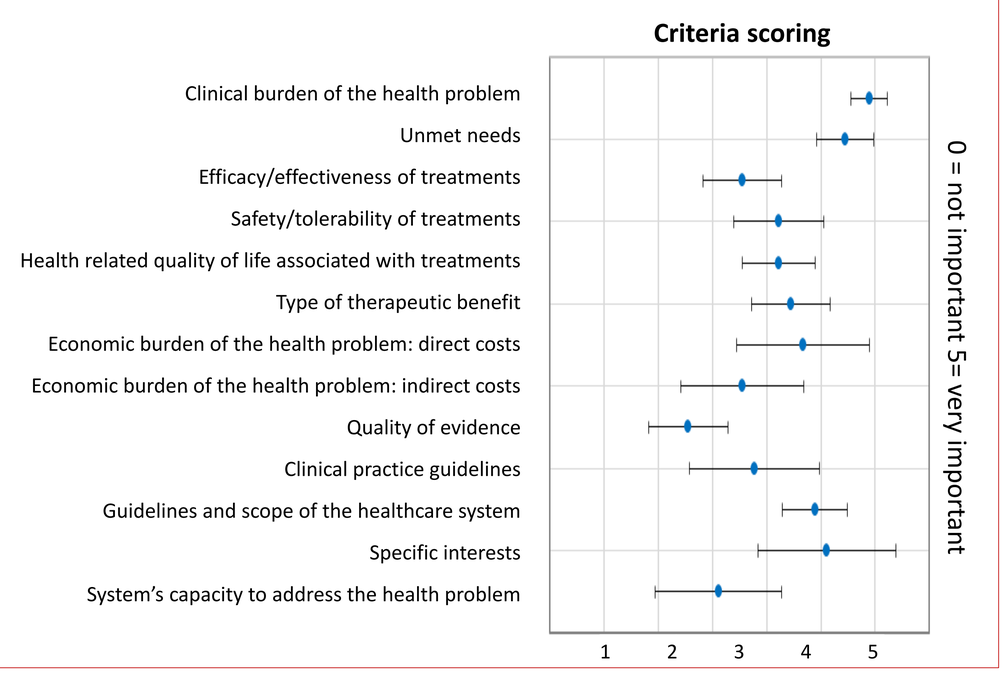
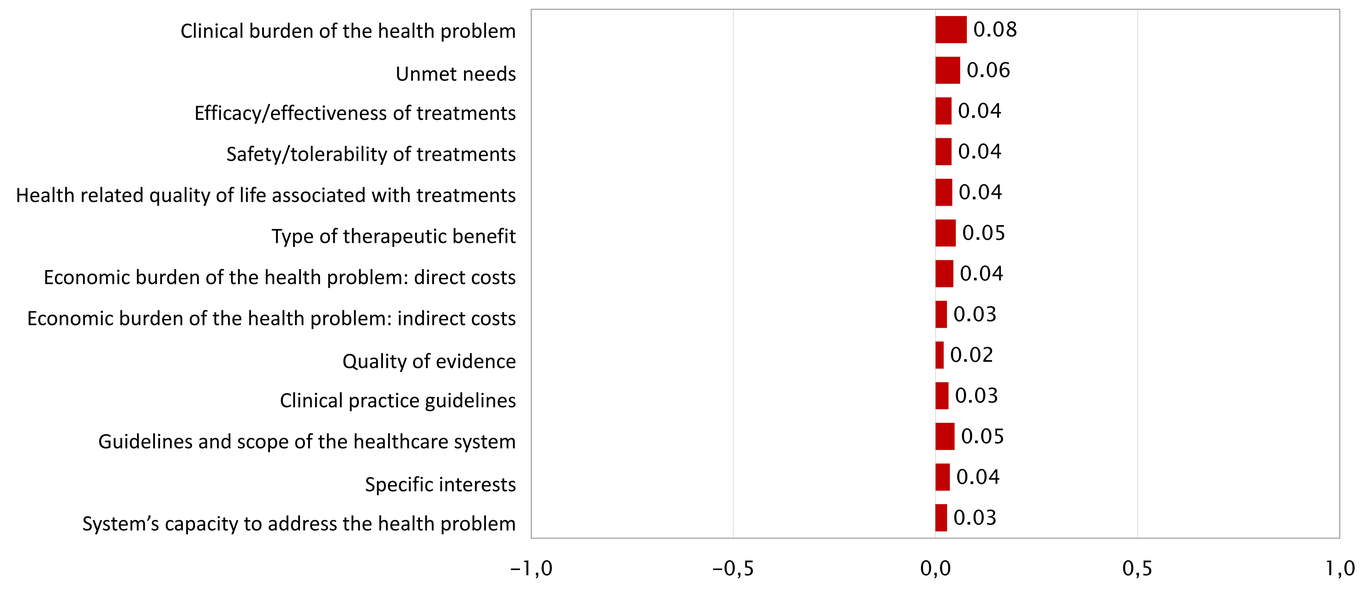


Figure 3. Value contribution for the assessment of the burden of CRGN in Spain



CONCLUSIONS

- Carbapenem-resistant gram-negative infections is considered a major public health problem for the Spanish National Health System, associated with a high burden and important unmet needs, mainly in the quality of evidence and the number of efficacious treatments.
- Multi Criteria Decision Analysis might help to determine the burden of CRGN considering clinical, economic, societal and contextual criteria.

REFERENCES

1. Goetghebeur MM, et al. Can reflective multicriteria be the new paradigm for healthcare decision-making? The EVIDEM journey. Cost Eff Resour Alloc. 2018 Nov 9;16(Suppl 1):54.

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