Multiple Criteria Decision Analysis for Health Care Decision Making An Introduction: Report 1 of the ISPOR MCDA Emerging Good Practices Task Force

Health care decision making is often a complex challenge with no easy answers. Many health care decisions require a careful assessment of the treatment options as well as the multiple criteria used to evaluate the available choices. Decision makers, whether they are individuals or committees, often have difficulty processing and systematically evaluating potential health care options due to the complexity and the need to consider a number of disparate factors. For example, analysis of health care options frequently requires the decision maker to confront trade-offs between conflicting objectives, assess multiple factors, weigh a variety of alternatives, and acknowledge that the information available is often imperfect.

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Health care decision making that occurs in the absence of objective evaluation criteria and processes can result in variability in the factors considered, discrepancies in how the importance of the factors or criteria are weighed, and inconsistent choices. Employing structured, explicit approaches that require evaluation of multiple criteria can significantly improve decision making quality. A set of techniques, known under the collective heading, *multiple criteria decision analysis* (MCDA), are useful for this purpose. MCDA comprises a broad set of methodological approaches that originated in operations research, but have a rich intellectual grounding in other disciplines [1].

MCDA methods have been widely used in other industries. As health care researchers and practitioners have become more aware of the techniques used in MCDA, there has recently been a sharp increase in its application in health care [2]. Examples of MCDA approaches in health care include the use of program budgeting and marginal analysis (PBMA) tools for resource allocation decisions by local health care budget holders [3], use of discrete choice experiments to inform priority setting [4], and the use of decision conferencing to weigh the benefits and risks of new medicines [5].

A critical challenge for users of MCDA is that there are many different MCDA methods available [6]. These methods differ not just in how MCDA is put into practice, but also in terms of the fundamental theories and beliefs underpinning them. The current literature on MCDA in health care offers little guidance on: 1) how to choose from the bewildering array of approaches, 2) which is the 'best' approach for different types of decisions, and 3) what the relevant considerations are. In the absence of guidance on how to implement MCDA techniques in health care, MCDA can be misused and decision makers can be misled [7].

To fill this guidance gap, ISPOR established an Emerging Good Practices Task Force charged with establishing a common definition for MCDA and developing Good Practice Guidelines for conducting MCDA to aid health care decision making. The initial ISPOR MCDA Task Force Report provides an introduction to the discipline, as it: 1) defines MCDA; 2) provides examples of its use in different kinds of decision making in health care; 3) provides an overview of the principal methods of MCDA; and 4) describes the key steps involved.

The second Task Force Report (in development), *MCDA for Health Care Decisions—Emerging Good Practices: Report 2 of the ISPOR MCDA Task Force*, will build on the first Report by providing emerging Good Practice Guidelines, including how to select the 'right' approach to MCDA in each type of decision and how to implement these approaches. Report 2 will also provide a checklist for those conducting an MCDA. The Task Force Reports do not provide specific recommendations for individual applications (e.g. how MCDA should be used in health technology assessment). Further research is required in order to thoroughly address the issues relevant to each decision.

In conclusion, MCDA does not replace judgment, but rather identifies, collects, and structures the information required by those making judgments to support the deliberative process.

References

[1] Kaksalan M, Wallenius J, Zionts S. Multiple Criteria Decision Making From Early History to the 21st Century 2011. [2] Diaby V, Campbell K, Goeree R. Multi-criteria decision analysis (MCDA) in health care: A bibliometric analysis. Operations Research for Health Care 2013;2:20-4. [3] Peacock SJ, Richardson JR, Carter R, Edwards D. Priority setting in health care using multi-attribute utility theory and programme budgeting and marginal analysis (PBMA). Soc Sci Med 2007;64:897-910. [4] Marsh K, Dolan P, Kempster J, Lugon M. Prioritizing investments in public health: a multi-criteria decision analysis. J Public Health (Oxf) 2012 Dec 14. [5] Phillips LD, Fasolo B, Zafiropoulos N, Beyer A. Is quantitative benefit-risk modelling of drugs desirable or possible? Drug Discovery Today: Technologies 2011;8:e3-e10. [6] Marsh K, Lanitis T, Neasham D, et al. Assessing the Value of Health care Interventions Using Multi-Criteria Decision Analysis: A review of the literature. Pharmacoeconomics 2014;32:345-65. [7] Mullen PM. Quantifying priorities in healthcare: transparency or illusion? Health Serv Manage Res 2004;17:47-58. ■

Additional information:

The complete first Task Force Report, *MCDA for Health Care Decision Making—An Introduction: Report 1 of the ISPOR MCDA Task Force* can be found at: http://www.ispor.org/Multi-Criteria-Decision-Analysis-guideline.asp

The second Task Force Report, *MCDA for Health Care Decision Making—Emerging Good Practices: Report 2 of the ISPOR MCDA Task Force* will be published in the March/April 2016 issue of *Value in Health*.