The objective of this study is to design a methodology for evaluation of medical technology for the purpose of purchasing medical devices in hospitals. The selection of an appropriate medical device so that its purchase is transparent and not overpriced is a big problem not only in the Czech Republic. The principal difficulty in any evaluation of technology consists in solving the problem of evaluating the effective component of instrumentation. It may not directly affect the parameters associated with the quality of life, nevertheless, it affects the quality of therapeutic and diagnostic processes, the attending physician’s way of work and, last but not least, the patient’s comfort.

The combination of value engineering methods for determining the weights for criteria, and multi-criteria decision making methods for sorting out individual devices appear a powerful tool in the purchase of medical appliances. All the methods were tested on a task to select lung ventilators for a university hospital in Prague. The suitability of the use of these methods was discussed with experts in hospitals, and they were accepted very positively.

Saaty’s method seems to be the most suitable method for the value engineering step, while the TOPSIS method proved to be the most appropriate method for the multiple-criteria decision making.

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