Letter to the Editor

Incremental cost-effectiveness ratio and net monetary benefit: Current use in pharmacoeconomics and future perspectives

In evaluating the cost/effectiveness of therapeutic interventions (e.g. those based on innovative drugs or on Class-III medical devices), two main pharmacoeconomic parameters have been used over the past decades: the incremental cost-effectiveness ratio (ICER [1–3])1 and the net monetary benefit (NMB [4–6]). The ICER and the NMB share some common features because they both require a pre-defined willingness-to-pay threshold (WTPt) and the acceptance of quality-adjusted life years (QALYs). Despite this, the differences between these two parameters prevail over the common features, and involve both theoretical and practical issues that can be summarised as follows: (i) the ICER is more complex than the NMB because the relationship between ICER and costs is nonlinear while the relationship between NMB and costs is linear; (ii) the “typical” health professionals, who are likely to be involved in real-life pharmacoeconomic decisions, are more familiar with ICER than with NMB, whereas the opposite would be preferable; (iii) as a matter of fact, the ICER is used much more frequently than the NMB, but this simply reflects the greater use of pharmacoeconomics for speculative purposes than for practical applications. In fact, if one counts the occurrences of the term “ICER” (or its synonyms) across the entire database of PubMed, 8184 citations are found, but if the search regards the term “NMB” (or its synonyms) the citations are only 148.

In countries where the healthcare system is publicly funded, the procurement of medicines and medical devices relies, particularly in hospitals, on competitive tenders. However, tenders can either be a purely administrative tool or a tool that incorporates the basic criteria of cost-effectiveness into the process of procurement. Using the entire database of PubMed, if one extracts the citations containing the word “QALY” (or its synonyms), a total of 14,311 occurrences are found. However, if one searches the citations for (QALYs) or (tender(s)) only 11 citations are found, while the great majority of these (N = 8) are false positive because they refer to medical terms such as “tender joint” or “tenderness”. In summary, the combination of “QALYs” and “tenders” (with tenders representing a procurement tool) counts only 3 citations in the whole archive of PubMed.

The present empirical picture aimed at assessing to what extent the procurement of medicines or medical devices in the everyday practice is based on the principles of cost-effectiveness is extremely disappointing because, among the two main methodological tools of this discipline, the more theoretical parameter (i.e. ICER) is used much more frequently than the more practical parameter (i.e. NMB). In addition, current tenders for medical products do not seem to be based on any conceptual framework of cost-effectiveness, because some computational models (even at a very basic level) would be required to accomplish this task, whereas virtually no proof of this activity emerges from the database of PubMed.

In conclusion, it is important to stress that, in public health-care systems, current methods of procurement do not employ cost-effectiveness principles and therefore determine acquisition prices of products (e.g. drugs and medical devices) without any formal theoretical framework. Although, at national level, Drug Agencies that negotiate reimbursement prices represent a positive exception (e.g. NICE in the UK, AIFA in Italy, IQWiG in Germany), the documents on prices adopted by these agencies are confidential and their methods are confidential too. Hence, we underscore that most of the scientific advancements achieved by cost-effectiveness unfortunately are kept at a purely academic level, and much work is still needed to transfer these cost-effectiveness methods into the real practice of procurement.

References


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1 Their mathematical definitions, normalized per 1 patient, are the following: ICER = (incremental cost per patient) / (incremental QALYs per patient) and NMB per patient = (QALYs per patient) / (WTP) – (sum of costs per patient).

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