

Book Review

Cost-Effectiveness in Health and Medicine. By M.R. Gold, J.E. Siegel, L.B. Russell, and M.C. Weinstein (eds). New York: Oxford University Press, 1996

Since its publication in 1996, *Cost-effectiveness in health and medicine*¹ and three summary articles in the *Journal of the American Medical Association*^{2–4} by the same authors (members of the Panel on Cost-Effectiveness in Health and Medicine) have become a standard of cost-effectiveness analysis.

The most significant feature of this volume is setting forth a clear and consistent set of rules for performing cost-effectiveness analysis. The usefulness of cost-effectiveness analysis lies in its ability to compare one program with another. The value of each cost-effectiveness analysis is analogous to the value of an intercom for communicating around a large building. A single intercom would be useless, as no one could hear the message. With two compatible intercoms, one conversation can at least begin. The number of two-way conversations then grows approximately with the square of the number of intercoms. With just ten compatible intercoms, 45 different two-way conversations would be possible. If the intercoms were not compatible, no conversations could occur. The field of cost-effectiveness analysis has been one with few 'conversations' because of incompatible approaches.

Gold *et al.* recommend that all cost-effectiveness analyses include the 'reference case' to help ensure consistency and relevance in future cost-effectiveness studies. The reference case specifies a standard comparator (existing usual care) against which new treatments are compared. The reference case uses a standard real discount rate of 3% per year—a rate that approximates the real long-term return in many public projects. Finally, the reference case adopts a societal perspective that includes not only the costs of health institutions, but also values the time of the patient, and unpaid time contributed by his friends and family.

One of the strengths of the book is the explicit discussion of modeling in linking the necessary data for cost-effectiveness analysis. Chapter 5 (Mandelblatt *et al.* 'Assessing interventions . . .') nicely catalogs the various types of model often used in cost-effectiveness analysis. As most realistic cost-effectiveness studies require combining information from economics, epidemiology, biostatistics and policy, all the necessary information is rarely furnished from a single data set or clinical trial. Commonly, the need arises because most cost-effectiveness studies have a time horizon extending across several years, and sometimes across decades or an entire lifetime. Few real intervention studies have this length of follow-up. Thus, this chapter notes, cost-effectiveness analyses of management strategies for chronic diseases often involve state-transition models, which are well suited to analyzing situations in which the states recur. Analyses of the diagnosis and management of acute conditions are well represented by decision trees, for which software such as SOFTREE is helpful.

One of the important by products of the use of models is the ability to refine the plans for possible health programs to make them more cost-effective. In chapter 3 ('Framing and designing . . .'), Torrance *et al.* note that a program of mammography screening for breast cancer addresses not only whether to screen, but also which women to screen and how frequently to repeat the screening.

The book's closing chapter (chapter 9, 'Reporting') by Siegel *et al.* is an explicit recognition that cost-effectiveness analysis is an applied field intended to influence policy. To enable decision makers to judge the quality of a cost-effectiveness analysis, this

chapter presents a checklist of items, such as listing the sources of data used and presenting the results of the reference case and sensitivity analyses, that a published report should include.

Ending with the interface between cost-effectiveness analysis and health policy, this book plants the seeds that a future volume could usefully address. One such topic is to explore why the technique has been embraced for solving one type of policy problem, while scorned for addressing another. The difference may lie in the ethical complexities involved. Gold *et al.* note that cost-effectiveness analysis is becoming increasingly used to assess new pharmaceuticals and medical devices. On the other hand, when the Oregon Health Commission first tried to apply cost-effectiveness analysis to set priorities for its Medicaid program, it was unable to obtain the necessary waiver from the federal Health Care Financing Administration until the Commission removed quality of life judgments, one of the key concepts of cost-effectiveness analysis, from its rating procedure. Officials of the federal agency feared that quality of life ratings might provoke a lawsuit under the Americans with Disabilities Act.

In chapter 4 ('Identifying outcomes') Gold *et al.* show the readers how incorporating quality of life judgments may, in fact, benefit persons with disabilities. The chapter cites the 1992 review of the Oregon Health Plan by the former Office of Technology Assessment. Preventing paraplegia was one of the services rated by the Oregon Health Commission. The value and priority of this service were most favorable, the lower the rating assigned to paraplegia. Ironically, members of the general public rated the quality of life for this condition lower than did persons who had already experienced the condition. Thus, the general public would assign a higher priority to the preventive program than would persons with disabilities. The interplay between cost-effectiveness analysis and ethics is complex, but worthy of further study.

A final seed is the need to extend cost-effectiveness analysis beyond the realm of physical health. The application of cost-effectiveness analysis to behavioral health care (mental health and substance abuse) is a particular interest to readers of this journal. The book notes that some general health scales, such as the EuroQol, do address the dimensions of anxiety and depression. On the other hand, more work is needed to adequately recognize the negative externalities of a lifestyle involving substance abuse. For example, a complete outcome measure of substance abuse treatment entails valuing the improvements in length and quality of life not only to the client, but also to others in society. Already, a recent doctoral dissertation under this reviewer's guidance is starting to build in this way on the Gold book.⁵

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References

1. Gold MR, Siegel JE, Russell LB, Weinstein MC (eds). *Cost-effectiveness in health and medicine*. New York: Oxford University Press, 1996, 176–209.
2. Russell LB, Gold MR, Siegel JE, Daniels N, Weinstein MC. The role of cost-effectiveness analysis in health and medicine. *J. Am. Med. Assoc.* 1996; **276**: 1172–1177.

3. Weinstein MC, Siegel JE, Gold MR, Kamlet MS, Russell LB. 'The Recommendations of the Panel of Cost-Effectiveness Analysis in Health and Medicine. *J. Am. Med. Assoc.* 1996; **276**: 1253–1258.
4. Siegel, JE, Weinstein, MC, Russell, LB, Gold, MR. 'Recommendations for Reporting Cost-Effectiveness Analyses.' *J. Am. Med. Assoc.* 1996; **276**: 1339–1441.
5. Bury-Maynard, D. *Developing a utility index for substance abuse: theory and application*. Unpublished Ph.D. dissertation, Heller Graduate School, Brandeis University, 1999.