
Book Review

Designing & Conducting Cost-Effectiveness Analyses in Medicine and Health Care by Muennig P and contributing editor Khan K. San Francisco: Jossey-Bass, John Wiley & Sons, Inc; 2002, 356 pp., UK £48.50, hardbound.

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Innovative processes in health care (especially halfway technologies) and demographic changes such as aging both have put great pressure on present and future health care budgets. These developments create an urgent need for an efficient use of resources allocated to health care. They result in health technology assessment (HTA) becoming much more focused on economic aspects of health technology. This has expanded the field of economic evaluations in health care enormously during the last two decades. Methodological developments have taken place, which have led to textbooks such as those of Gold et al. (4) and Drummond et al. (2).

In 2002, Peter Muennig published *Designing & Conducting Cost-Effectiveness Analyses in Medicine and Health Care*, a book about designing and conducting cost-effectiveness analyses (CEA) in medicine and health care. Muennig is Director of the Program in Cost-Effectiveness and Outcomes at the Robert J. Milano Graduate School of Management and Urban Policy at the New School University, New York. He has worked as a Cost-Effectiveness Consultant for the Centers for Disease Control and Prevention and published various studies in the medical field.

In our view, Muennig has produced a well written practical guide for those wishing to perform economic evaluations in the field of health care. The book adheres closely to the principles developed by the Panel on Cost-Effectiveness in Health and Medicine and addressed by Gold et al. (4). Compared to Gold et al., this textbook is theoretically less in-depth. The approach Muennig follows in his book adheres more to the framework of the clinician, the policymaker who is interested in the basic concepts of CEA, and the junior researcher in this field.

The book begins with an introduction to the concept of CEA and the value of economic evaluations for policy makers (chapter 1). In chapter 2, the key methodological principles of CEA are outlined using a ten-step approach to develop a research project. This ten-step approach is similar to the checklist approach of Drummond et al. (2). The major difference is the prospective approach of Muennig (how to set up a CEA) versus the retrospective approach (how to evaluate a CEA) presented by Drummond et al. The ten different steps are explained in chapters 2 through 11 of the book. By following these chapters, the reader can design and conduct a CEA (from a societal perspective). This is illustrated by a particular case-example (evaluation of different strategies for the prevention or treatment of influenza virus infections in healthy adults). Chapter 3, titled, “Working with Data,” summarizes several methodological issues related to performing clinical research and in particular CEA. The author presents practical guidance about how to work with rates and distributions and how to critically evaluate the medical literature on these issues.

Chapter 4 focuses on how to obtain data. We consider it a drawback that mostly public U.S. health data sets (governmental web sites) are presented. For those wishing to conduct a CEA outside of the United States, this chapter has less practical value. It is also unfortunate that the author gives neither information about systematic reviews nor a presentation using the systematic review approach on the topic himself in this chapter. However, the author presents practical sheets to summarize journal articles and electronic data sets (see also appendix two of the book). Related to the above-mentioned drawback is what we feel to be another pitfall of the book: It does not state anything about levels of evidence. This is important because synthesizing should be transparent, in economic analysis as well as in HTA. The use of evidence levels stimulates transparency and is therefore recommended to be included in the data sheet. The rationale for this is to present relevant data in such a way that one can compare sources and judge the validity and quality as well, as was done by Busse et al. (1).

Features of meta-analysis are introduced in chapter 3 and further discussed in chapters 5 and 10. In chapter 5, common (mostly epidemiological) probabilities to be used in CEA are discussed. The examples for obtaining data

(e.g. health-related quality of life (HRQL) scores and mortality data) are, although solely U.S. oriented, still informative as to how to obtain data for CEA.

Chapter 6 addresses with the concept of costing. Three steps for estimating costs are presented and discussed. Muennig is rather complete in covering the different issues related to the costing concept; however, he avoids any in-depth discussion of these issues. For example, the discussion about future medical costs: the dilemma Muennig describes—whether these should be included in CEA or not—is illustrated by an example that states that smokers actually saved the society money because they tend to die at a relative young age, while nonsmokers tend to develop chronic diseases later in life and rack up huge medical bills. A lot could be added to this discussion (and also the other costing issues), for example the fact that smokers contribute relatively more to the economy than nonsmokers as they buy rather highly taxed smoke articles. When one expects a more in-depth analysis on such an issue the book refers (almost immediately) to Gold et al. (4) and the guidelines formulated by the Panel on Cost-Effectiveness in Health and Medicine. This is illustrative for this textbook: it lacks an in-depth discussion on most topics. This makes the book more or less a “do it yourself toolkit” for those who think cost-effectiveness data can contribute to their research but do not care exactly why.

Decision analysis is subject of chapter 7, introducing Markov models and providing instructions for building a decision analysis model. Chapters 8 and 9 focus on quality of life measures and quality-adjusted life years (QALYs). In chapter 8, the foundation of HRQL scores, how to obtain these scores, and how these scores can be used are presented. The author states, “*It is not absolutely necessary to understand these methods to derive an health-related quality of life (HRQL) score (p. 191).*” However, we think it is important to understand these mechanisms if you would like to derive this score yourself in conducting a CEA.

The methods for calculating QALYs are presented in chapter 9: (a) life table method (the total number of years lived in perfect health of survivors in a hypothetical cohort is added together, Erickson et al. (3)); (b) summation method (changes in the number of QALYs over time are added together, Drummond et al. (2), and (c) disability-adjusted life years—DALY (total number of healthy life years lost to a disease is added to the total years of health lost to disability). The summation method is used in the example on vaccination and treatment in relation to supportive care regarding influenza virus infections in healthy adults.

Chapter 10 introduces the topic on how to deal with uncertainty in CEA. This chapter discusses issues like sensitivity analysis and Monte Carlo simulation. This enables people to study the robustness of the model. In addition, it shows how sensitive results are to changes in certain parameters or in the statistical methods of synthesis (e.g. random effects). The Monte Carlo simulation provides more comprehensive information about the range of expected values (a distribution of values of a hypothetical cohort of subjects) of the strategies studied compared to one-way and two-way sensitivity analyses. All these chapters include “tips and tricks” and exercises. The exercises are, in our view, a very valuable component of the book. It makes it very easy to apply the theory presented.

Chapter 11 illustrates the practical focus of this textbook. Advice is provided about how to prepare a CEA for publication. This chapter provides the reader a publication format for a CEA and the elements that need to be described in an article. In the last chapter (chapter 12), the reader can learn more about some advanced concepts, such as calculating QALYs using a Markov model and Bayesian statistics.

The examples that are discussed throughout the book are applicable to both industrialized and developing countries. This provides the book some extra merit and we can imagine it makes it more attractive to beginners in this field and clinicians who like to integrate their clinical efficacy/effectiveness research with some additional data on cost-effectiveness.

In summary, although the target audience of the book is intended to be mainly students it also provides, in our opinion, a guide for “do-ers” of HTA. We have referred several times to the books of Gold et al. (4) and Drummond et al. (2). It is doubtful that this book can competes with these two books, as it operates, in our opinion, in a different niche. The book by Muennig is more practice oriented and easier to understand than those by Drummond et al. and, especially, Gold et al.

REFERENCES

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