

Chapter 7

Cost–Effectiveness Analysis and the Value for Money of Health Technologies

Steven Simoens

Katholieke Universiteit Leuven, Belgium

ABSTRACT

Cost-effectiveness analysis serves as a tool to assess the value for money of a health technology. This chapter aims to review different approaches to assessing value for money of health technologies. First, the chapter discusses the methodological basis of the incremental cost-effectiveness ratio approach. Second, the chapter reviews alternative approaches such as the replacement approach, program budgeting and marginal analysis, the generalised optimisation framework, and multi-criteria decision analysis. This information will aid health care decision makers and researchers to interpret cost-effectiveness analyses and their results for the purpose of decision making.

INTRODUCTION

A health technology refers to any measure for the prevention, diagnosis, treatment and rehabilitation of a disease, including vaccines, drugs, medical and surgical procedures, and medical devices. It also refers to the organisational and support systems in which health care is provided and, therefore, encompasses for example pharmacoinformatics or the application of information technology in pharmaceutical science. Over the

past decades, health technologies have made a major contribution to improving the health status of populations (Grootendorst, Pierard, & Shim, 2009). At the same time, countries of the Organisation for Economic Co-Operation and Development witnessed an annual average growth in health expenditure per capita of 4% during the 1995-2005 period (Organisation for Economic Co-Operation and Development, 2007). Growth in health expenditure outpaced economic growth of 2.2% during the same period. Health

DOI: 10.4018/978-1-4666-0309-7.ch007

expenditure growth can be attributed to a number of factors, including ageing populations, the increasing prevalence of chronic conditions, health care resource use price inflation, technological advances, and increased expenditure on drugs. In response to this, Governments seek instruments that can aid the implementation of safe and effective health technologies that support further health improvements, whilst containing health expenditure.

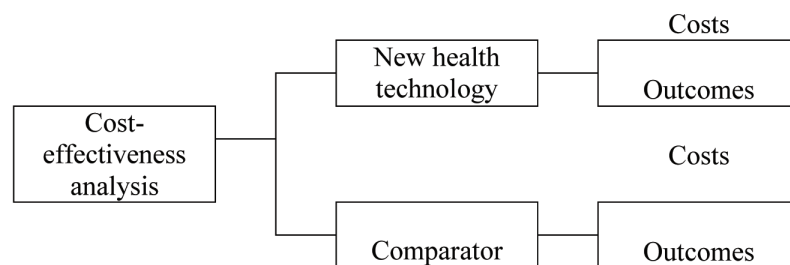
Cost-effectiveness analysis serves as a tool to assess the value for money of a health technology by comparing the costs and outcomes of the health technology with those of a relevant comparator (Drummond, Sculpher, Torrance, O'Brien, & Stoddart, 2005). Cost-effectiveness analysis can be applied to any health technology, irrespective of whether it is a drug, a surgical procedure, smart pump delivery of drugs, pharmacy departmental applications, IV solution compounding systems, robotics used in the preparation and dispensing of medication interfaces to e-prescribing applications, or automatic dispensing machines. Whereas cost-effectiveness analyses have been primarily performed for drugs, medical, and surgical procedures, this technique has been less applied to pharmacoinformatic technologies.

The results of a cost-effectiveness analysis can be expressed in the form of an Incremental Cost-Effectiveness Ratio (ICER), which relates the difference in costs between a health technology and the comparator to the difference in outcomes.

Evidence derived from cost-effectiveness analyses is used to inform health technology pricing/reimbursement decisions in many countries. For instance, in order to obtain registration and reimbursement, drugs need to overcome a number of so-called hurdles. A new drug needs to demonstrate its quality (first hurdle), safety (second hurdle) and efficacy (third hurdle) with a view to obtaining a registration. Reimbursement may depend on the value for money of the drug at the time of the reimbursement application (fourth hurdle) and after a number of years following the admission to the reimbursement system (fifth hurdle). The requirement for cost-effectiveness analysis fits within an overall trend towards evidence-based decision making in health care (Perleth, Jakubowski, & Busse, 2001).

The aim of this chapter is to discuss current advances and future directions for assessing the value for money of health technologies. This chapter outlines the methodological basis for assessing the value for money of health technologies in comparison with a threshold ICER, reviews the strengths and weaknesses of the threshold ICER approach, and discusses various approaches to determine the threshold ICER. Then, a number of alternative approaches to assessing the value for money of health technologies are presented. This information will aid health care decision makers and researchers to interpret cost-effectiveness analyses and their results for the purpose of decision making.

Figure 1. Components of a cost-effectiveness analysis



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