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# Defining Elements of Value in Health Care—A Health Economics Approach: An ISPOR Special Task Force Report [3]

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ABSTRACT

The third section of our Special Task Force report identifies and defines a series of elements that warrant consideration in value assessments of medical technologies. We aim to broaden the view of what constitutes value in health care and to spur new research on incorporating additional elements of value into cost-effectiveness analysis (CEA). Twelve potential elements of value are considered. Four of them—quality-adjusted life-years, net costs, productivity, and adherence-improving factors—are conventionally included or considered in value assessments. Eight others, which would be more novel in economic assessments, are defined and discussed: reduction in uncertainty, fear of contagion, insurance value, severity of disease, value of hope, real option value, equity, and scientific spillovers. Most of these are theoretically well understood and available for inclusion in value assessments. The two exceptions are equity and scientific spillover effects, which require more theoretical development and consensus. A number of regulatory authorities around the globe have shown interest in some of these novel elements. Augmenting CEA to consider these additional elements would result in a more comprehensive CEA in line with the "impact inventory" of the Second Panel on Cost-Effectiveness in Health and Medicine. Possible approaches for valuation and inclusion of these elements include integrating them as part of a net monetary benefit calculation, including elements as attributes in health state descriptions, or using them as criteria in a multicriteria decision analysis. Further research is needed on how best to measure and include them in decision making.

***Keywords:*** cost-effectiveness analysis, economics of medical technology, health technology assessment, value of health care.



## Introduction

The First Panel on Cost-Effectiveness in Health and Medicine [1] had underscored the need for health care sector decision makers to evaluate both health and cost impacts in considering the adoption and use of health care technologies. To date, payers, politicians, and other stakeholders in the United States have often been reluctant to embrace formal approaches for health care resource allocation decisions [2–4]. Nevertheless, cost-effectiveness analysis (CEA) is now gaining prominence given its use by value framework developers such as the Institute for Clinical and Economic Review, the American College of Cardiology with the American Heart Association, as well as the publication of new guidelines from the Second Panel on Cost-Effectiveness in Health and Medicine [5,6].

In this section, we identify and define a series of elements that warrant consideration in value assessments of medical technologies. We aim to broaden the view of what constitutes value in health care and to spur new research on incorporating additional elements of value into CEA or cost-utility analysis (CUA). On the basis of our understanding of current CEA and health technology assessment (HTA) practices, and input from our broader Expert Advisory Board and Stakeholder Advisory Panel, we identified a list of elements, ranging from the conventional to the cutting-edge. These have been discussed in a range of relevant literatures—economic, clinical, ethical, and so forth. In the technical appendix in Supplemental Materials found at https://doi.org/10.1016/j.jval.2018.12.007, we illustrate how to incorporate many of these elements into a logically consistent microeconomic model of health care technology value

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assessment. Here, we confine our presentation to an intuitive explanation of these elements.

For ease of exposition, we begin our analysis with the conventional and long-practiced approach to measuring value in health care and then progressively expand toward the "frontier," where we find more novel value elements. Figure 1 presents a value "flower" that summarizes the concepts to be discussed. The elements in green are considered the core elements of value assessments. The elements in light blue are common but inconsistently used in value assessments. The ones in dark blue are more novel, and not typically considered. The blue lines indicate value concepts from the traditional payer or health plan perspective, and the red lines indicate concepts also included from the broader societal perspective. Each of these 12 elements in the figure's value flower—quality-adjusted life-years (QALYs), net costs, productivity, adherence-improving factors, reduction in uncertainty, fear of contagion, insurance value, severity of disease, value of hope, real option value, equity, and scientific spillovers—is discussed in subsequent sections, with an extended description of the concept and references to previous research.

## Costs and QALYs

As discussed in the section by Garrison et al. [7], the underlying concept of value from a health economic perspective is typically measured using CEA. The cost-effectiveness of a medical technology is always calculated relative to alternative choices. For this reason, CEA focuses on *incremental costs* and *incremental benefits*.

As recommended by the Second Panel [6], a wide range of costs or cost savings—present and future—should be considered, so long as they result directly from the interventions of interest. Future cost savings resulting from a treatment today should be subtracted from the direct treatment cost to yield the net incremental cost of treatment. When relevant, future net costs should be appropriately adjusted for uncertainty and discounted from the year of occurrence. The set of costs included should reflect the perspective of the relevant decision maker. If the perspective is that of the payer, then the focus is on costs borne by the payer. If the perspective is of a government, then the effects on tax revenue, prison spending, public assistance spending, and the like might need to be considered.

Benefit is measured from the perspective of the patient (or potential patient) given the health care technology in question. For instance, the benefit of a drug will depend on what the treated patient thinks about it, and not the prescribing physician or even the insurance company paying for it. Nevertheless, valuation of these benefits to patients can be based on a broader societal perspective. Various different health benefits ought to be considered. For instance, a medical technology might influence a patient's life expectancy, mobility, experience of pain, sleep quality, or a nearly limitless set of other health-related factors. Ideally, we would have some way of capturing all these changes in terms of a common unit.

To solve this problem, health economists have developed the concept of QALY, which can in principle be used to measure the health benefit of any technology, regardless of the disease it treats [8]. The QALY is the fraction of a perfectly healthy life-year that remains after accounting for the damaging effects of an illness or condition. For instance, potential patients (or consumers) might feel that 1 year spent with total blindness is equal in value to 6 months spent in perfect health. In principle, any health state—whether blindness, mobility impairment, debilitating pain, and so on—can be equated to some fraction of a perfectly healthy life-year. This fractional value, when compared with 1 year of perfectly healthy life, is also called a health state "utility." This is the reason that CEA using the QALY is often referred to as CUA, which is a very useful form of CEA.

As an example, suppose that patients with lung cancer can expect to live an average of 4 years. Suppose also that they value each year spent with lung cancer as equal to 6 months of life spent in perfect health. Thus, they experience 2 QALYs. Now suppose that a new drug is introduced that extends life expectancy to 4.5 years. Suppose further that it reduces some of the disabilities and comorbidities associated with lung cancer such that patients now value 1 year spent with lung cancer as being

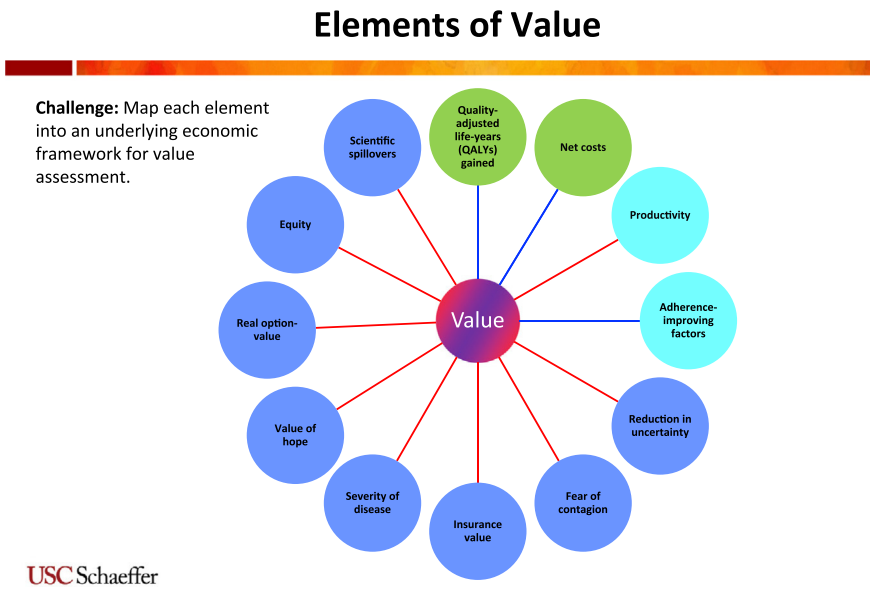


**Fig. 1 – Elements of value. Note. Green circles: core elements of value; light blue circles: common but inconsistently used elements of value; dark blue circles: potential novel elements of value; blue line: value element included in traditional payer or health plan perspective; and red line: value element also included in societal perspective.**