



Generalized Cost-Effectiveness Analysis

Generalized cost-effectiveness analysis, commonly referred to as GCEA, is an expanded framework for cost-effectiveness analysis that was developed in response to the limitations of conventional cost-effectiveness analysis and in alignment with recommendations from leading health economists.

The primary distinction between GCEA and CEA is that GCEA includes a broader set of value elements and is focused on the societal impact of healthcare treatments rather than the narrower health sector impact of healthcare treatments that is traditional with CEA.

Need for GCEA

Conventional cost-effectiveness analysis typically takes a health sector perspective and thus focuses primarily on health care costs, patient survival, and patient quality of life. However, numerous groups and leading researchers have called for a broader inclusion of elements. In 2016, the Second Panel on Cost-Effectiveness in Health and Medicine, which is a group of economists that provide recommendations to improve cost-effectiveness analysis, called for a societal perspective cost-effectiveness analysis alongside every cost-effectiveness analysis conducted using the more conventional health sector perspective.

A societal perspective would go beyond healthcare costs and patient health benefits to include things like productivity, education, housing, and the environment.

In 2018, a Special Task Force Report by the International Society for Pharmacoeconomics and Outcomes Research defined additional elements of value beyond those that are conventionally captured in cost-effectiveness analysis with some overlap with the Second Panel of Cost-Effectiveness in Health and Medicine. The Special Task Force defined novel elements of value such as reduction in uncertainty, equity, and value of hope. Despite these calls for a broader definition of value from leading researchers since 2016, cost-effectiveness analyses primarily including healthcare costs, patient survival, and patient quality of life remained the status quo.

Conventional cost-effectiveness analysis is also limited due to the assumptions, or lack thereof, around changes in a drug's price over time. It is common practice for conventional cost-effectiveness analysis to assume the price of a drug stays constant over time, ignoring any future price changes that may occur due to generic competition. Without accounting for genericization, a cost-effectiveness analysis can misrepresent the treatment costs for the drugs evaluated. Recommendations for cost-effectiveness analyses to incorporate these expected price changes (often referred to as dynamic costs) have only intensified as of late, and now a preponderance of evidence exists to support assumptions around these price changes within a cost-effectiveness analysis.



The GCEA Framework

In 2024, a group of leading health economists published a user guide for implementing GCEA. It included **15 value elements that were categorized within four categories:** uncertainty, dynamics, beneficiary, and additional value components. The **uncertainty category** included outcome certainty, disease risk reduction, and value of knowing. The **dynamics category** included dynamic costs, dynamic prevalence, societal discount rate, option value, and scientific spillover. The **beneficiary category** included patient-centered health improvements, equity, and family and caregiver spillover. The **additional value element category** included community spillovers, productivity, adherence, and direct non-medical costs. These value elements were informed by the additional domains of value suggested by the Second Panel on Cost-Effectiveness in Health and Medicine and the International Society for Pharmacoeconomics and Outcomes Research Special Task Force, and by the calls for the inclusion of dynamic costs by academic researchers.

In addition to compiling each of the novel value elements in a single framework, the user guide detailed the methods to measure and incorporate each of the novel value elements within a generalized cost-effectiveness analysis. These methods include approaches like generalized risk-adjusted cost-effectiveness to account for outcome certainty, disease risk reduction, and patient-centered health benefits, as well as stacked cohort models to account for dynamic costs and dynamic prevalence.

CATEGORIES

UNCERTAINTY

outcome certainty, disease risk reduction, and value of knowing

DYNAMICS

dynamic costs, dynamic prevalence, societal discount rate, option value, and scientific spillover

BENEFICIARY

patient-centered health improvements, equity, and family and caregiver spillover

ADDITIONAL VALUE ELEMENTS

community spillovers, productivity, adherence, and direct non-medical costs

Interpreting GCEAs

A specific threshold to interpret the summary measures from a generalized cost-effectiveness analysis has not yet been recommended and the impact of individual value elements on a threshold is still being researched. Although generalized cost-effectiveness analysis quantifies a broader set of value elements than conventional cost-effectiveness analysis, even it cannot comprehensively capture the total value of a treatment and the revealed preferences of society.

Recommended Reading

1. **A Health Economics Approach to US Value Assessment Frameworks-Summary and Recommendations of the ISPOR Special Task Force Report** by Garrison et al., 2018 in *Value in Health*.
2. **Defining Elements of Value in Health Care** by Lakdawalla et al., 2018 in *Value in Health*.
3. **The History and Future of the "ISPOR Value Flower"** by Neumann et al., 2022 in *Value in Health*.
4. **The Case for Including Dynamic Drug Pricing in Cost-Effectiveness Analyses** by Whittington et al., 2023 in *Health Affairs Forefront*.
5. **Valuing the Societal Impact of Medicines and Other Health Technologies** by Shafrin et al., 2024 in *Forum for Health Economics & Policy*.

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