
Postgraduate Certificate in Pharmacoeconomics and Health Economics

Applied Economic Evaluation

Applied Economic Evaluation in Pharmacoeconomics and Health Economics

Applied Economic Evaluation is a critical aspect of Pharmacoeconomics and Health Economics, aiming to assess the economic value of healthcare interventions and pharmaceutical products. In this course, students will learn key terms and concepts essential for conducting economic evaluations in healthcare settings. Let's explore some of the fundamental vocabulary in this field:

Economic Evaluation

Economic evaluation is a method used to compare the costs and outcomes of different healthcare interventions. It helps decision-makers allocate resources efficiently by considering both the costs and benefits of healthcare programs or treatments. There are different types of economic evaluations, including cost-effectiveness analysis, cost-utility analysis, cost-benefit analysis, and cost-minimization analysis.

Pharmacoeconomics

Pharmacoeconomics is a sub-discipline of health economics that focuses on the economic evaluation of pharmaceutical products and services. It involves assessing the cost-effectiveness of drugs, comparing different treatment options, and determining the value for money in healthcare interventions involving medication.

Health Economics

Health economics is a branch of economics that examines how healthcare resources are allocated and how healthcare systems operate. It involves analyzing the costs and benefits of healthcare interventions, evaluating healthcare policies, and studying the factors influencing healthcare decisions.

Cost-Effectiveness Analysis (CEA)

Cost-effectiveness analysis is a type of economic evaluation that compares the costs of healthcare interventions with their outcomes in natural units (e.g., life years gained, cases cured). It helps decision-makers understand the relative value of different treatment options by calculating the cost per unit of health outcome achieved.

For example, if a new drug costs \$100,000 per patient and extends life by two years compared to the existing treatment, the cost-effectiveness ratio would be \$50,000 per life year gained ($\$100,000/2$ years).

Cost-Utility Analysis (CUA)

Cost-utility analysis is a type of economic evaluation that compares the costs of healthcare interventions with their outcomes in quality-adjusted life years (QALYs). QALYs combine both the quantity and quality of life gained from a specific intervention, providing a more comprehensive measure of health outcomes.

For example, if a treatment costs \$50,000 per patient and improves the quality of life by 0.5 QALYs compared to another treatment, the cost-utility ratio would be \$100,000 per QALY gained ($\$50,000/0.5$ QALYs).

Cost-Benefit Analysis (CBA)

Cost-benefit analysis is a type of economic evaluation that compares the costs and benefits of healthcare interventions in monetary terms. It involves estimating both the costs and benefits of a program or treatment and calculating the net present value of the intervention.

For example, if a preventive healthcare program costs \$1 million to implement but generates \$2 million in healthcare savings and improved productivity, the net benefit of the program would be \$1 million ($\2 million - $\$1$ million).

Incremental Cost-Effectiveness Ratio (ICER)

The incremental cost-effectiveness ratio (ICER) is a key metric in economic evaluation that calculates the additional cost of achieving one additional unit of health outcome. It is used to compare the cost-effectiveness of different healthcare interventions and determine the value for money in healthcare decision-making.

For example, if a new treatment costs \$50,000 per patient and produces an additional five years of life compared to the standard treatment, the ICER would be \$10,000 per life year gained ($\$50,000/5$ years).

Sensitivity Analysis

Sensitivity analysis is a technique used in economic evaluation to assess the robustness of results to changes in key parameters or assumptions. It helps researchers understand the uncertainty surrounding cost-effectiveness estimates and evaluate the impact of different scenarios on the outcomes of the analysis.

For example, researchers may conduct a sensitivity analysis by varying the discount rate, the cost of treatment, or the effectiveness of the intervention to determine how sensitive the results are to changes in these inputs.

Quality-Adjusted Life Year (QALY)

The quality-adjusted life year (QALY) is a measure of health outcome that combines both the quantity and quality of life gained from a specific intervention. It assigns a value between 0 (equivalent to death) and 1 (equivalent to perfect health) to each year of life lived, allowing for the comparison of different healthcare

interventions in terms of their impact on quality of life.

For example, if a treatment extends life by two years and improves the quality of life by 0.5 on a scale from 0 to 1, the total QALYs gained would be 2.5 (2 years + 0.5 QALYs).

Discounting

Discounting is a technique used in economic evaluation to adjust future costs and benefits to their present value. It accounts for the time preference of individuals and reflects the idea that a dollar today is worth more than a dollar in the future. Discounting is used to make costs and benefits comparable over time and to account for the opportunity cost of capital.

For example, if a healthcare intervention costs \$10,000 in year 1 and generates benefits of \$5,000 in year 2, discounting would adjust the future benefits to their present value based on the discount rate applied.

Decision Analysis

Decision analysis is a quantitative method used in economic evaluation to model complex decision-making processes under uncertainty. It involves structuring decision problems, identifying alternative courses of action, estimating the probabilities of different outcomes, and evaluating the consequences of each decision option.

Decision analysis helps decision-makers assess the trade-offs between costs, benefits, and risks associated with different healthcare interventions and make informed choices based on the available evidence.

Probabilistic Sensitivity Analysis

Probabilistic sensitivity analysis is a technique used in economic evaluation to account for uncertainty by incorporating probability distributions for key parameters in the analysis. It allows researchers to explore the impact of uncertainty on the results of the economic evaluation and provides a more comprehensive understanding of the range of possible outcomes.

For example, researchers may use probabilistic sensitivity analysis to estimate the probability that a healthcare intervention is cost-effective at different willingness-to-pay thresholds or to assess the likelihood of different scenarios based on the uncertainty in the data.

Value of Information (VOI)

The value of information (VOI) is a concept in economic evaluation that quantifies the potential benefits of reducing uncertainty in decision-making. It involves estimating the value of additional research or data collection to improve the accuracy of cost-effectiveness estimates and inform better healthcare resource allocation decisions.

VOI analysis helps decision-makers prioritize research investments, identify the most valuable sources of

information, and determine the optimal strategy for reducing uncertainty in economic evaluations.

Budget Impact Analysis

Budget impact analysis is a method used in economic evaluation to assess the financial implications of adopting a new healthcare intervention or technology within a specific budget constraint. It helps decision-makers understand the affordability of implementing a new treatment or program and evaluate its impact on the overall healthcare budget.

Budget impact analysis considers both the direct costs of the intervention (e.g., drug costs, administration costs) and the potential savings or costs avoided as a result of implementing the intervention (e.g., reduced hospitalizations, improved health outcomes).

Opportunity Cost

Opportunity cost is a fundamental concept in economic evaluation that refers to the value of the next best alternative foregone when a decision is made. In healthcare decision-making, opportunity cost reflects the trade-offs between different healthcare interventions or programs and the resources that could have been allocated to alternative uses.

For example, if a hospital invests resources in a new medical equipment purchase, the opportunity cost may be the healthcare services or interventions that could have been provided with the same resources if allocated differently.

Willingness-to-Pay (WTP)

Willingness-to-pay (WTP) is a concept in economic evaluation that reflects individuals' preferences for different healthcare interventions or outcomes. It represents the maximum amount of money an individual is willing to pay to receive a specific health benefit or avoid a health risk.

WTP is used to determine the value that society places on healthcare interventions, inform cost-effectiveness thresholds, and guide decision-making on resource allocation in healthcare settings.

Health Technology Assessment (HTA)

Health technology assessment is a multidisciplinary process that evaluates the clinical, economic, social, and ethical implications of healthcare technologies and interventions. It involves assessing the safety, effectiveness, cost-effectiveness, and broader impact of new healthcare technologies to inform decision-making on their adoption, reimbursement, and use in healthcare systems.

HTA plays a crucial role in guiding healthcare policy decisions, improving the quality and efficiency of healthcare services, and ensuring the value for money in healthcare investments.

Conclusion

In conclusion, understanding key terms and concepts in Applied Economic Evaluation is essential for conducting rigorous economic evaluations in Pharmacoeconomics and Health Economics. By mastering these fundamental vocabulary and techniques, students will be well-equipped to assess the economic value of healthcare interventions, inform decision-making on resource allocation, and contribute to improving the efficiency and effectiveness of healthcare systems.