

SPPH 541: Economic Evaluation

School of Population and Public Health • University of British Columbia

Winter Session 2019

Section 002

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Background

In their individual roles as managers in health care institutions, administrators in the Ministry of Health or Health Regions, clinicians in primary or tertiary care settings, or as health service researchers, these individuals are increasingly faced with the task of having to justify their decisions with respect to the choice of treatment drug, diagnostic test, and hospitalization strategy according to the cost-effectiveness of the intervention. Health policymakers are equally burdened with the necessity to rationalize funding decisions, i.e. do they represent good choices from a value for money perspective. Economic evaluation of health interventions provides an approach/algorithm for responding to such resource allocation problems and is based on the concept of maximizing the health benefits accruing from finite health care budgets. Economic evaluation is one specialty area within the larger domain of health economics and we will restrict our focus on evaluation of interventions.

Learning Objectives

1. Introduce and familiarize students with the basic concepts and tools of economic evaluation in health services research.
2. Provide students with basic knowledge and tools to undertake critical evaluation of published economic evaluations of new drugs, technologies, and other health interventions.
3. Provide students with a methodological framework with which to undertake the design of economic evaluation protocols.
4. Provide students with an appreciation of the role of economic evaluations in the process of health care resource allocation and health policy making.

Course Format

The course will be a combination of lecture presentations, discussion, in-class exercises, and assignments. The lecture presentation topics are as noted below. An active participatory role is expected of each student. There will be specific assignments relating to utility measurement, cost-effectiveness analysis based on individual-level data, and/or building a simple model.

Textbook

We recommend that students buy:

Michael F. Drummond, Mark J. Sculpher, Karl Claxton, Greg L. Stoddart, George W. Torrance. *Methods for the Economic Evaluation of Health Care Programmes*. Fourth edition: Oxford: Oxford University Press; 2015.

Or an older version:

Michael F. Drummond, Mark J. Sculpher, George W. Torrance, Bernie J. O'Brien, Greg L. Stoddart. *Methods for the Economic Evaluation of Health Care Programmes*. Third edition: Oxford: Oxford University Press; 2005.

Student Evaluation

Blog assignment (20%) – group work

- The assignment involves watching a video “The Price of Life” - BBC Documentary by Adam Wishart.
- Students will be expected to discuss what they think, apply the concepts and theories learned from the course to explain or address the issue, and answer relevant questions.

Three assignments (60%)

- Three assignments are 1) case studies to compare different methods or instruments measuring health utilities and health-related quality of life, and to calculate consumer surplus and social net benefit of a new health program; 2) to build a simple model for a cost-effectiveness analysis; 3) to conduct a cost-effectiveness analysis based on a simulated clinical trial database and explain the results.
- Students will be expected to understand the concepts including consumer surplus, health utility, QALY and ICER, know how to conduct a cost-effectiveness analysis alongside clinical trials or through a simple decision analytic model, and be able to explain the findings from a cost-effectiveness analysis and make the corresponding funding decision.

Critical assessment of a published article (20%) – group work

- As a group (3-5 students depending on the final class size), students will undertake a critical review of a published article on a cost-effectiveness study, which is selected by the group or the instructors, and make an oral presentation about the article and their review.
- Students will be expected to briefly summarize the study, present their evaluation with reference to the major items related to study quality and believability from their informed perspective, and make their funding recommendation.

Course Material

All course material including readings, lecture presentations and assignments will be available via [UBC CanVas](#). For most lectures, readings from the relevant section of the textbook are noted. In addition some readings are recommended as optional. Please abide by UBC copyright regulations as outlined in: <http://copyright.ubc.ca/requirements/fair-dealing/>.

Course Topics

1. Economic Theory behind Economic Evaluation – Welfare Economics & Resource Allocation (1 session)

- Consumer and Producer Surplus
- Loss in Efficiency and Deadweight Loss
- Decision Rule
- Decision Making
- Specification Error
- Budget Constraints and Constrained Optimization
- Mutually Exclusive vs. Inclusive Health Interventions
- Welfarism and Extra-Welfarism
- Value Based Pricing
- Dynamic vs. Static Efficiency

2. Economic Evaluation in Health Care: Overview of Basic Approaches (1 session)

- Economic Evaluation Rationale
- Specific Approaches: CEA, CUA, CBA
- Measuring Costs
- Outcome Measures
- Viewpoints / Perspectives
- Sensitivity Analysis
- Resource Allocation with Fixed Budgets

3. Cost-Effectiveness/Utility Analysis: Economic Approaches to Measuring Health Outcomes (1 session)

- CEA vs. CUA
- Type of QOL Measures
- Utility, Value and Preference
- Attitudes towards Risk
- Methods of Measuring Preferences
- Feeling Thermometer or Rating Scale
- Standard Gamble
- Time Trade Off
- Risk Preferences
- Multi-attribute Health Status Classification
- QALYs
- Discounting Health vs. Wealth
- Alternatives to QALYs

4. Cost Analysis (1 session)

- Fixed, Variable and Total Cost
- Average Cost vs. Marginal Cost
- Time Preference
- Present Value
- Annuitization
- Discount Rates
- Perspectives
- Direct Costs and Indirect Costs
- Measurement and Valuation of Productivity Loss
- Allocation of Shared Costs

5. Economic Evaluation Using Decision Analytic Modelling: Estimating Probabilities, Utilities and Building Trees (1 session)

- Elements of Decision Analysis
- Structuring the Problem in Decision Analysis
- Decision Analysis with Costs and Outcomes
- Exercise based on Surgery Example
- Generating Random Variables
- Monte Carlo Simulation
- Cost effectiveness Acceptability Curves

6. Economic Evaluation Using Decision Analytic Modelling: Alternative Approaches (1 session)

- Sources of Parameters
- Decision Tree versus Markov Models
- Two Period Decision Tree Exercise
- Multi-period Markov Model Exercise
- Probabilistic Exercise

7. Economic Evaluation Using Patient-Level Data (1 session)

- Statistical Analysis of Patient-Level Data
- Alternative Experimental Designs
- Internal and External Validity
- Limitations of Clinical Trial data for Economic Models
- Intermediate vs. Final Health Outcomes
- Observational Data and Longitudinal Registries

8. Economic Evaluation Using Patient-Level Data (1 session)

- Bootstrapping
- Case Study using a Simulated Clinical Trial Data
- SAS/R programs for Cost-Utility Analyses

9. Economic Evaluation of Diagnostic Tests (1 session)

- Cost Effectiveness Analysis of Diagnostic Tests
- Test Sensitivity and Specificity
- Fallback Strategy
- Empirical Study Examples

10. Cost-Benefit Analysis: Willingness to Pay Approaches to Measuring Health (1 session)

- Willingness to Pay Approaches
- Human Capital Approach
- Societal Benefit/Cost Analysis
- Valuing Human Life: Economic Models
- Revealed Preferences
- Contingent Valuation
- CV Design Considerations
- Discrete Choice Experiments

11. Pharmaceutical Regulations, Guidelines and Healthcare Sustainability (1 session)

- Historical Overview of Pharmaceutical Industry Regulations in Canada
- Guidelines: CADTH, NICE etc.
- Evidence of Guideline Impact: National and International Comparisons
- Impact of Pricing Policies in Canada

12. Student Presentations on Critical Assessment of a Published Article (1 session)