Economic Evaluation Methods for Health Services Research
HAD5730 / Fall 2010

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Lecture Location:	Room 100, Health Sciences Building 155 College Street, Toronto, M5T 3M6
Class Day & Time:	Wednesdays 10.00 to 13.00

Course web address: http://portal.utoronto.ca/

Course Description

Health Economics is concerned with the study of resource allocation within the health sector and between that sector and other sectors. This course is designed to introduce participants to an array of economic evaluation methods used to assess health care programs, services, technologies, and other interventions. Prior knowledge of economics is not required; however, participants are expected to possess quantitative skills (e.g., the ability to undertake statistical analyses). Upon completion, participants will not only have analytic skills that are applicable to economic evaluation, they will also know how economists approach important issues in health services research and decision-making.

Course Objectives

This course is designed to attain three general objectives as well as a series of specific competency objectives:

General Objectives:

1. To introduce learners to different types of economic evaluations.

2. To acquaint learners with the approaches and viewpoints that applied health economists bring to health services research.

3. To apply economic evaluation techniques to important contemporary issues in Canadian health services research and decision-making.

Specific Course Objectives:
Upon completion of this course, learners will be able to:

1. Recognize that the basic economic problem is one of choice since resources are scarce and wants are virtually unlimited.
2. Identify five types of economic evaluations: cost minimization analysis; cost-effectiveness analysis; cost-utility analysis; cost-benefit analysis; and budget impact analysis.
3. Detect the costs and outcomes of health care programs from an array of perspectives: society, government, the Ministry of Health, consumers and providers.
4. Measure health outcomes in natural units (e.g. life years gained), health state utilities (e.g. quality adjusted life years gained) and monetary units.
5. Allocate overhead and capital costs to individual health care programs.
6. Use a discounting rate to compare costs and benefits accruing at different time points.
7. Evaluate health care programs on the basis of incremental cost-outcome analysis and to describe the relationship between this evaluation technique and the concept of marginal cost and average cost.
8. Know how to conduct and to interpret the results of an economic evaluation of a health care program.

Method of Instruction

The course is organized in three-hour modules involving lectures, group work and discussion. Lectures will last approximately two hours before learners will be asked to work together on problem based exercises. Both lectures and integrated exercises are used to attain the course objectives. The lectures are designed to present the tools of economic analysis, while the exercises are designed to demonstrate how these tools might be applied to particular issues in health services research. After the group work, the entire class will engage in discussion and "trouble-shooting". Students are expected to inform the instructor(s) if they are having difficulty with the course material, and these difficulties are to be addressed through both discussion and further applications.

Evaluation Objectives

An array of evaluation techniques are used in this course, including short answer questions, problem sets that require quantitative analysis, and a substantive course project, that requires knowledge and understanding of the tools of economic evaluation. The evaluation techniques chosen are designed so that students may **apply** *health economics* thinking to health services issues. The assigned readings complement the lectures and group work. For each reading, students are expected to know the issues addressed, the methodology adopted, the empirical and theoretical results reached as well as the policy and administrative conclusions that flow from the economic analysis. **Students are expected to have read the required readings prior to class.**

Group work (In-class Exercises): There will be regular exercises to enhance classroom discussion and to provide students with an indication of how well they are meeting the course objectives.

Assignments:
There will be one assignment to be completed by **October 06**. The assignment is designed so that students may **apply** the methods of economic analysis to solve problems in health economics. In addition to providing feedback to students on their performance in the course and helping the students prepare for the course project and the examination, the assignment provides the instructors with tangible feedback on both the performance of students as well as possible difficulties students may have with the course material.

Course Project:
The purpose of the course paper is to provide an evaluation of the student's understanding of the principles and practices of health economics. The project provides learners with an opportunity to demonstrate their ability to **apply** the methods of economic analysis to a specific problem area. Based on prior experience, a competent project conducted by groups of two students will entail **approximately 200 person hours**.

The course project **should** be conducted as a group assignment, with preferably **two or three** individuals comprising a group. The grade for the course project will be determined by the instructor and assigned to each group member.

All projects must address health care issues and include a designated partner from the field of practice or policy. Each group is to discuss with the instructor the topic(s) covered by their project. **A WRITTEN PROPOSAL** of the scope and the approach to be taken is to be given to the instructor by **WEDNESDAY OCTOBER 13th and** a **University Ethics Submission may need to be completed. See the online ethics form (blackboard) and ethics website: http://www.research.utoronto.ca/ethics/eh_forms.html.** The proposal must be no more than 2 pages, typed, double-spaced, in 12 point Times New Roman with standard 1" margins, in which you:

1. Identify the intervention to be evaluated;
2. Develop a rationale for the economic evaluation;
3. Outline the perspective to be taken;
4. Justify the specific economic evaluation technique to be used;
5. Outline the data sources; and
6. Indicate the health care partner.

The course project provides students with an opportunity to apply the methods of economic analysis to a clinical intervention, or to a health management or health policy issue. The project must include:

1. Clearly articulated question(s) that guide data collection and analysis. The reason why the group selected this question should be discussed, including any steps taken to focus the analysis.
2. A systematic (or evidence-informed) review of the literature.
3. Discussion of the data collected to answer the question(s).
4. An explanation of where or from whom the data were obtained, including issues concerning potential data bias.
5. An explanation and outline of the economic evaluation methods used to address the clinical intervention, the health management and/or health

policy question(s).

6. Methods for displaying the data to facilitate the reader's interpretation of the economic evaluation results.
7. Discussion of the major findings, including the rational for any conclusions drawn from the economic analysis.

The body of the course project, that is excluding the abstract, appendices, figures and tables, must be no more than 15 pages, typed, double-spaced, in 12 point Times New Roman with standard 1" margins. The project should include a ONE-PAGE BRIEFING NOTE (or STRUCTURED ABSTRACT). You must retain a copy of the course project in the event that the original is lost. The DEADLINE for receipt of the completed course project is 17.00 in Room 420 on Wednesday December 8, 2010. Projects submitted after the due date will be penalized at the rate of four (4) percentage points per day.

Since it is sometimes difficult to identify possible economic evaluation topics, particularly in the clinical field, I suggest each group:

1. Make appointments to visit clinicians or senior managers in health provider institutions or organizations, product manufacturers, Local Health Integration Networks or areas within the Ministry of Health;
2. Ask about programs, services and interventions which are:
   (i) Resource intensive to the health care system, organization and/or to clients and their families;
   (ii) For which there is uncertainty regarding the indications for and outcomes following intervention; AND
   (iii) Where there exists MORE then one type of intervention or delivery modality to address the client's needs.
3. Based on those costly interventions for which there is uncertainty regarding the indications for, choice of and outcomes following intervention, ask about outcome measures currently employed.
4. Based on the narrow range of interventions, proceed with an economic evaluation exercise:
   (i) Motivate the project through use of information on the prevalence of the specific client conditions to be studied;
   (ii) Conduct a review of the literature by assessing outcome measures in the chosen area, indicating how these measures apply to the interventions in question, and examining the possibility of a common outcome instrument;
   (iii) Outline the components of direct and indirect costs, the perspective adopted, how each set of costs are to be evaluated and how these costs vary between interventions; and
   (iv) Summarize your conclusions concerning the costs and consequences of each type of intervention using a common unit for outcomes and costs.

Summary of Course Grade	
Homework assignment	15%
Project Proposal	15%
Classroom Participation	10%
Project Presentation	10%
Final Course Project	50%
Total	100%

Course Textbook

Drummond M.F., Sculpher M.J., Torrance G.W., O'Brien B.J., Stoddart G.L. Methods for the Economic Evaluation of Health Care Programmes , Third Edition (Oxford University Press: Oxford), 2005, hereafter, **DSTOS**.

In addition to the course textbook, other materials have been placed on reserve at the library. From the External Links *option on our course webpage, the full list is available.*

Classroom Sessions:

W September 15 **Overview of health economics and economic evaluation:** This session emphasizes the scope of the field of health economics, an overview of economic evaluation, and a discussion of Canadian health services finance, delivery and organization.

W September 22 **Resource costing concepts, methods and data sources:** This session emphasizes methods used to identify, measure, value and compare the resource costs attributable to health care programs, services, technologies, and other interventions. Concepts such as discounting, time preference, productivity costing and valuing indirect costs will be reviewed.

W September 29 **Cost-effectiveness analysis:** This session will review theories, methods and economic appraisals concerning cost-effectiveness analysis. Special attention will be placed on decision analytic methods including decision trees in economic evaluations.

W October 06 **Cost-utility analysis:** This session will review theories, methods and economic appraisals concerning cost-utility analysis. Special attention will be placed on measures of health related to quality of life and utility assessment.

W October 13 **Cost-benefit analysis:** This session will review theories and studies concerning cost-benefit analysis with attention placed on willingness-to-pay and discrete choice analysis. The welfarist and extra-welfarist approaches to resource allocation decisions will also be reviewed.

Classroom Sessions: **(Cont'd)**

W October 20 **Project group meeting**

W October 27 **Economic evaluations using decision analytic methods:** This session will provide a review of decision analytic methods in economic evaluation with consideration of simple decision trees and Markov cohort modeling.

W November 03 **Uncertainty and sensitivity analyses:** This session will review methods used to incorporate uncertainty in economic evaluations in order to inform decision makers about the degree of confidence to be placed on the associated estimates. Emphasis will placed on: one-way, two-way and probabilistic sensitivity analysis; and regression analysis, confidence intervals and cost-effectiveness acceptability curves.

W November 10 **Budget impact analysis:** This session will address budget impact analyses and the use of economic evaluations by decision-makers with consideration of the relative importance of incremental cost-effectiveness ratios, uncertainty, budget impact and other factors.

W November 17 **Project group meeting**

W November 24 **Value of information in economic evaluations:** This session will review methods that assess whether decision makers, including clinicians, have sufficient information on which to make decisions or whether additional information needs to be acquired.

W December 01 **Evaluating health technologies: other perspectives:** This session will introduce theories, concepts and methods from the 'other' social sciences, that bring a more complex lens to understanding the assessment, development, implementation, diffusion and obsolescence of health technologies.

W December 08 **Course project presentations**

Readings

Readings are either indicated with "a" if they are to be read prior to class and "b" if they are considered optional but beneficial additional readings.

Wednesday, September 15 Dr. Peter C. Coyte

SESSION 1 –"Overview of health economics and economic evaluation"

Readings:

a DSTOS, Chs. 1 & 2

b Drummond MF, Stoddart GL, Labelle R, Cushman R, "Health economics: An introduction for clinicians". Annals of Internal Medicine, 107:1, 88-92, 1987.

b Coyte PC, McMahon M, "Regulatory Frameworks to Safeguard Patient Access to Health Care in an Environment of Increased Private Finance for Health Care." Unpublished Manuscript, 2006.

Wednesday, September 22 Dr. Ron Goeree

SESSION 2 –"Resource costing concepts, methods and data sources"

Readings:

a DSTOS, Ch. 4

a Liljas B, "How to calculate indirect costs in economic evaluations." Pharmacoeconomics 13:1 part 1, 1-7, 1998.

b Koopmanschap M A, van Ineveld BM, "Towards a new approach for estimating indirect costs of disease." Social Science and Medicine 34:9, 1005-1010, 1992.

Wednesday, September 29 Dr. Murray Krahn

SESSION 3 –"Cost-effectiveness analysis"

Readings:

a DSTOS, Ch. 5

b Motiwala SS, Gupta S, Lilly MB, Ungar WJ, Coyte PC, "The Cost-Effectiveness of Expanding Intensive Behavioural Intervention to All Autistic Children in Ontario" Healthcare Policy 1:2, 125-141, 2006.

b Fuchs VR, "The rationing of medical care." New England Journal of Medicine 311:24, 1572-1573, 1984.

Wednesday, October 06 Dr. Ahmed Bayoumi

SESSION 4 –"Cost utility analysis"

Readings:

a DSTOS, Ch. 3 & 6

a Weinstein M, Torrance G, McGuire A, "QALYs: The Basics." Value in Health 12:1, S5-S9, 2009.

a Drummond M, Brixner D, Gold M, Kind P, McGuire A, Nord E, "Toward a Consensus on QALY." Value in Health 12:1, s31-s35, 2009.

a Braithwaite S. R., Meltzer D, King J, Leslie D, Roberts M, "What does the value of modern medicine say about the $50,000 per quality-adjusted life-year decision-rule?" Medical Care 46:4, 349-356, 2008.

b Nord E, Daniels N, Kamlet M, "QALYs: Some Challenges." Value in Health 12:1, S10 – S15, 2009.

b Winkelmayer W, Weinstein M, Mittelman M, Glynn R, Pliskin J, "Health

Economic Evaluations: The Special Case of End-Stage Renal Disease Treatment." Medical Decision Making Sept-Oct, 417-430, 2002.

b Laupacis A, Feeny D, Detsky AS, Tugwell PX, "How attractive does a new technology have to be to warrant adoption and utilization? Tentative guidelines for using clinical and economic evaluations." CMAJ 146:4, 473-81, 1992. Comments in: CMAJ 148:6, 913-7 and 921-4, 1993.

b Laupacis A, Feeny D, Detsky AS, Tugwell PX. "Tentative guidelines for using clinical and economic evaluations revisited." CMAJ 148:6, 927-9, 1993.

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***** ***Homework Assignment is DUE OCTOBER 6*** *****

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Wednesday, October 13 Dr. Dean Regier

SESSION 5 –"Cost-benefit analysis"

Readings:

a DSTOS, Ch. 7

a Gold MR, Siegel JE, Russell LB, Weinstein, MC: Cost-Effectiveness in Health and Medicine, Oxford University Press: Oxford, 1997, Chapter 2, "Time Costs" pp. 38-45 and Chapter 6, "Types of Resource Costs" pp. 178-183.

a Olsen JA, Smith RD, "Theory versus practice: a review of 'willingness-to-pay' in health and health care." Health Economics 10, 39-52, 2001.

a Regier DA, Friedman JM, Marra CA., "Value for money? Array genomic hybridization for diagnostic testing for genetic causes of intellectual disability." American Journal of Human Genetics, 14;86(5), 765-72, 2010.

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***** **Project Proposal *is DUE OCTOBER 13*** *****

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Wednesday, October 20

SESSION 6 – Project Group Meeting

Wednesday, October 27 Dr. Michele Kohli

SESSION 7 –"Economic evaluation using decision analytic modelling"

Readings

a DSTOS, Ch. 9

a Weinstein MC, O'Brien B, Hornberger J, et al., "Principles of good practice for decision analytic modeling in health-care evaluation: Report of the ISPOR Task For on Good Research Practices-Modeling Studies." Value in Health 6:1, 9–17, 2003.

b Philips Z, Ginnelly L, Schulpher M, Claxton K, Golder S, Riemsma R, et al.,

"Review of guidelines for good practice in decision-analytic modelling in health technology assessment." Health Technology Assessment 8:36, 1-172, 2004.

b Hunink M, Glasziou P et al., Decision making in health and medicine: Integrating evidence and values. Cambridge: Cambridge University Press; 2001.

b Briggs A, Schulpher M, Claxton K, Decision modelling for health economic evaluation. Oxford: Oxford University Press; 2006.

b Sonnenberg FA, Beck JR, "Markov Models in Medical Decision Making: A Practical Guide." Medical Decision Making *13*(4): 322-338, 1993

Wednesday, November 03 Drs. Jeffrey Hoch and Armineh Zohrabian
SESSION 8 –"Uncertainty and sensitivity analyses"

Readings

a DSTOS, Ch. 8 & 9, especially Section 9.4.5

a Briggs A, Sculpher M, Buxton M, "Uncertainty in the economic evaluation of health care technologies: The role of sensitivity analysis". Health Economics 3:2, 95 – 104, 1994.

Wednesday November 10: Dr. Eric Nauenberg
SESSION 9 –"Budget impact analysis"

Readings

a DSTOS, Ch. 10

a Nauenberg E, Flood C, and Coyte P, "A Complex Taxonomy: Technology Assessment in Canadian Medicare" Chapter 3 in Health Care Coverage Determinations: An International Comparative Study Edited by Jost, T., Open University Press: New York, 2005.

a Trueman P, Drummond M, Hutton J, "Developing Guidance for Budget Impact Analysis" PharmacoEconomics 19:6, 609-621.

b Johri M, Damschroder LJ, Zikmund-Fisher BJ, Ubel PA. "The importance of age in allocating health care resources: does intervention-type matter?" Health Economics 14, 669 – 678, 2005.

b Johri M, Lehoux P. "The great escape? Prospects for regulating access to technology through health technology assessment." International Journal of Technology Assessment in Health Care 19:1, 179-93, 2005.

Wednesday, November 17
SESSION 10 – Project Group Meeting

Wednesday, November 24 Mike Paulden
SESSION 11 –"Value of information in economic evaluations"

Readings

a DSTOS, Ch. 9 & 10

a Claxton K, Posnett J. An economic approach to clinical trial design and research priority-setting. Health Economics; 5:513-524.

a Ginnelly L, Claxton K, Sculpher MJ, Golder S. Using value of information analysis to inform publicly funded research priorities. Applied Health Economics and Health Policy 2005; 4:37-46.

b Claxton K, Ginnelly L, Sculpher MJ, Phillips Z, Palmer S. A pilot study on the use of decision theory and value of information analysis as part of the National Health Service Health Technology Assessment Programme. Health Technology Assessment; 8(31):1-118.

b Claxton K, Neumann PJ, Araki SS, Weinstein MC. The value of information: an application to a policy model of Alzheimer's disease. International Journal of Technology Assessment in Health Care; 17:38-55.

Wednesday, December 01 Dr. Fiona Miller

SESSION 12 –"Evaluating health technologies: other perspectives"

Readings

a Health Technology Assessment Task Group. 2004. Health Technology Strategy 1.0, Final Report. Federal/ Provincial/ Territorial Advisory Committee on Information and Emerging Technologies, June. www.cadth.ca/media/policy.../1_health_tech_strategy_1.0_nov-2004_e.pdf

a Lehoux P, Blume S, "Technology Assessment and the Sociopolitics of Health Technologies." Journal of Health Politics, Policy and Law 25:6, 1083-1120, 2000.

a Denis JL, Hébert Y, Langley A, Lozeau D, Trottier LH, "Explaining Diffusion Patterns for Complex Health Care Innovations." Health Care Management Review, 27:3, 60–73, 2002.

Wednesday, December 08

SESSION 13 – Course Project Presentations

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***** **Course Projects are *DUE December 8 by 17.00*** *****