OVERVIEW

This seminar-style course provides an introduction to the use of cost-benefit and cost-effectiveness analysis in health care. We examine both the underlying theory and the practical application of these techniques, using studies from the literature and issues discussed by students in class. The focus is on applications in health care, which differ from those used in contexts of public decision-making. A key focus will be on the extent to which this type of analysis assembles information which decision-makers do or should find helpful, especially in the context of public and private insurance.

COURSE FORMAT AND REQUIREMENTS

Class participation. The class format is lecture/discussion. We will take a break at about 5:45. Students are expected to read the required readings before each session and come prepared to participate in class discussion.

Short midterm paper. Students will be asked to write a short (10 page) paper critiquing and commenting upon the relevance of the methods and the conclusions of the published studies on the cost effectiveness of screening for Abdominal Aortic Aneurysm. Critiques should concentrate on the fundamental ideas in cost-benefit and cost-effectiveness analysis. They should also deal both with the extent to which they provide useful information for relevant decision-makers and. the extent to which these studies meet the criteria proposed by the Petrov and Gray (BMJ, 2011) and the checklist provided in Chapter 3 of the Drummond book. Due date October 1 (30%).

Three-quarter quiz. This is a closed book, in-class test, administered after completion of the formal analysis material. It will cover the main principles and methods that have been covered in the readings and lectures (30%). The quiz will be November 5.
Term project. Each student will develop a term project in the form of a decision-maker’s question and a CB or CE analysis which would answer it (on a topic of your choice, subject to approval). **An outline of the topic and proposed approach will be due on October 22.** The term project will be presented orally, with written supplementation such as the power point presentation (40%) on the last day of class: December 3.

CLASS OUTLINE AND READINGS

Below is a list of required and supplementary textbooks. A coursepack of additional required reading (book chapters, etc.) is available for order online through [www.study.net](http://www.study.net). You may choose to download electronic copies of the files, or request a hard-copy coursepack. Readings that are optional are indicated in the reading list with an asterisk; they may be referred to in class.

**Required Texts** (available at Penn Bookstore)


**Additional Texts** (available at Penn Bookstore)


**Basic Cost-Benefit Texts** (not required)


Other course materials will be posted throughout the semester to the course e-room on Canvas. You can access Canvas directly through: [https://canvas.upenn.edu](https://canvas.upenn.edu).

**Non-Wharton students will need a Wharton class account in order to access Canvas.** To set up your Wharton account, please use the “Class Accounts” link here: [http://accounts.wharton.upenn.edu](http://accounts.wharton.upenn.edu). Please note that you **must be officially enrolled in the course for at least one business day** before opening a Wharton class account. Canvas access should begin working approximately 20 minutes after creating your account.
Session 1: Introduction to Concepts (HG)

Key Concepts
- CBA, CEA and other types of analysis
- Cost and effect measures
- Decision rules
- Users of CBA/CEA

Drummond et al., Chapters 1-2.


Session 2: Welfare Economic and Other Foundations of Cost-benefit and Cost-Effectiveness Analysis (HG)

- Efficiency; market failure
- First theorem of welfare economics
- Private vs. social measurement of cost and benefit
- Equity vs. efficiency
- Consumers’ surplus; opportunity cost; transfer payments
- External effects; altruism


Weinstein M, “From Cost-Effectiveness Ratios to Resource Allocation: Where to Draw the Line?”

Weisbrod, Test and Stein, “Alternatives to Mental Hospital Treatment,” *Arch Gen Psychiatry* (1980).

Introduction to CE Analysis and Decision Analysis (HG)

**Key Concepts**
- Introduction to CE Analysis: What question does it answer?
- Choice criteria for CEA
- The cost-effectiveness frontier
- Net benefits and choice criteria


Drummond et al., Chapter 5.


Discounting (DP) + AAA Example (DP)

**Key Concept**
- Discounting


CE Analysis Example AAA

- Read the newspaper article and the 4 CE analyses which will be critiqued in class


Multicentre Aneurysm Screening Study Group, “Multicentre Aneurysm Screening Study (MASS): Cost Effectiveness Analysis of Screening for Abdominal Aortic Aneurysms Based on Four Year Results from Randomised Controlled Trial,” *BMJ* 325 (16 November 2002).

- **These additional articles are for you to critique for your assignment.**


- **Readings to help with critiquing cost-effectiveness analyses**

Drummond et al., Chapter 3.


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**Session 5:**

**Economic Theories of Cost (DP)**

**Key Concepts**

- **Cost theory for welfare economics**
  - Opportunity cost; sunk costs, overhead costs; marginal costs
  - Allocation of joint and/or overhead costs

- **Approaches to cost estimation**

- **Prices as costs**
  - Endogenous market responses to regulation

Drummond et al., Chapter 4, “Cost Analysis” (pp. 69-73).

Brent, Chapter 2, “Cost minimization and the definition of ‘cost’”; Chapter 3, “Types of costs and their measurement”; Chapter 4, “External cost”.


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**Session 6:**

**Practical Costing (HG) + QALYs and Cost-utility Approaches (HG)**
**SHORT PAPER DUE**

**Key Concept**
- **Approaches to cost estimation**

Glick, Doshi, Sonnad, Polsky, Chapter 3, "Valuing Medical Service Use," *Economic Evaluation in Clinical Trials*, Forthcoming.


**Key Concepts, QALYs**
- **Values vs. Utilities**
- **Methods of measuring preferences (other than willingness to pay)**
- **Defining and measuring QALY weights**
- **Healthy Year Equivalents: the controversy**


(FALL BREAK – NO CLASS ON OCT 8)

Session 7: **QALYs II (HG) and Statistical issues in CEA and CBA (HG)**
**QALYs and Cost-utility Approaches: Finish readings from Session 6**

**Key Concepts, Statistical Issues**
- Implementation
- Analysis
- Validity


**Session 8:**

**Statistical Issues (II) (HG)**

*Statistical issues: Finish readings from Session 7*

**Session 9:**

**Measuring Benefits in Money (DP)**

**Key Concepts**
- Approaches to valuing health in monetary terms (Ch. 7 / Ch 11)
- Human Capital (Linnerooth)
- Revealed prices in market (Viscusi)
- Direct measures / contingent valuation (O’Brien, Brent, Ch 12, and Klose)

Drummond et al., Chapter 7, “Cost-benefit Analysis.”


Session 10: Can CB and CE be Linked (DP)

November 5

Key Concepts
• Economic Foundations of CEA (Garber, Garber and Phelps, Meltzer)
• Debate: CEA vs. CBA (Lee, and Brouwer)

Garber AM, “Advances in Cost-Effectiveness Analysis of Health Interventions,” Handbook of Health Economics, Vol. 1A, Chapter 4. (Focus on pages 198-204.)


Session 11: The Cost Effectiveness Threshold and Willingness to Pay for a QALY (DP)

November 12

QUIZ


**Session 11:** Economics of Treatment Choice and Implications for Cost-Effectiveness Policy (AS)  
(Tuesday)  
**Key Concepts**  
- Treatment choice in practice  
- Variation in value and/or effectiveness  
  - Focus: cost-sharing  
  - Focus: personalized medicine  


**Session 12:** Project Meetings  
(Tuesday)

**Session 14:** Student Presentations  
(December 3)