Overview and Objectives:

The purpose of this course is to introduce the concepts and techniques used in the economic evaluation of health care programs. As the pressures of managed care and increasing health care costs push providers, payers and purchasers of health care to become more efficient, methods for understanding the appropriate basis for how to allocate shrinking health care resources must be understood. This course will provide an understanding of the foundations of cost effectiveness analysis, and sufficient detail regarding the mechanics and methodologies to prepare students to both interpret and critique the literature of cost effectiveness analysis and construct these analyses themselves.

Responsibilities:

Students are expected to read the assigned reading, attend class and participate, and complete the problem sets and the final exam.

Course Requirements:

Problem sets (3) 50%
Final Exam 50%

Attendance Policy:

Students are expected to sign-in to each class (computer provided in suite lobby). If a problem is encountered with the sign-in system, please contact the course instructor(s) as well as Lauren Talotta (talottals@upmc.edu) immediately.

Course Grading Scale:

93-100 A
90-92 A-
88-89 B+
80-87 B
78-79 B-
70-77 C
60-69 D
<60 F

Course Mechanics:

1 credit (2 hours/session, 1-2 sessions/week, for 4 weeks)

Required textbook:


Principal article (to be used as an example throughout the course):


Optional text (on reserve at Falk Library)

Academic Integrity:
Students in this course will be expected to comply with the University of Pittsburgh’s Policy on Academic Integrity (http://www.provost.pitt.edu/info/ai1.html). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Learning Objectives:
Upon completion of this course, the student will be able to:

1. Assess the costs of a health care intervention including downstream effects
2. Assess the benefits of a health care intervention, including downstream effects
3. Construct an incremental cost effectiveness ratio for an intervention with known costs and effectiveness
4. Interpret the ICREs for a series of health care interventions and utilize them in making resource allocation questions
5. Evaluate the quality of a published cost effectiveness article

These objectives will serve to fulfill the following competencies:

Competencies:
For students taking this as HPM 2217, this course addresses several of the University of Pittsburgh HPM learning competencies, and will assess those competencies through the evaluations of assignments and exams. The specific competencies this course addresses are:

Cross-Cutting Competencies:

1. Analytical Thinking. The course will increase analytic skills through
   a. understanding methods of assessing costs and effects of health interventions
   b. examples and practice in the use of cost and effectiveness data to make resource portfolio decisions

Management:

2. Financial Skills
   a. The course will provide understanding of the estimation of costs by various accounting mechanisms (macro costing/microcosting)

3. Information Technology Management
   a. introductions to the ways that various information systems (claims systems, cost accounting systems) can be used to estimate intervention costs

Contextual / Environmental Understanding:

4. Strategic Orientation
   a. Learn methods for using costs and effectiveness of interventions to maximize specific organizational objectives

Objective/Competency/Assessment map:

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Teaching Methods</th>
<th>Assessment</th>
<th>Learning</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td>Analytical Thinking</td>
<td>Readings, Lectures, Participation, Exam Preparation/Study</td>
<td>Exams, problem sets</td>
<td>1,2,3,4,5</td>
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<tr>
<td>Financial Skills</td>
<td>as above</td>
<td>as above</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Information Technology Management</td>
<td>as above</td>
<td>as above</td>
<td>1,2</td>
</tr>
<tr>
<td>Strategic Orientation</td>
<td>as above, plus classroom discussion, session 8</td>
<td>as above</td>
<td>4</td>
</tr>
</tbody>
</table>

**Accommodation for Students with Disabilities:** If you have any disability for which you may require accommodation, you are to notify both your instructor and the Office of Disability Resources and Services, 216 William Pitt Union (412-648-7890) during the first two weeks of the term.”
Session 1  Introduction, Economic and Social Foundation of CE Analysis

Concepts and Topics:
This session will introduce the motivation behind using economic analysis in health care, including concepts of utility theory and maximization within budget constraints. We will define various cost analyses (cost benefit analysis, cost effectiveness analysis, cost utility analysis), and describe common misuse (cost minimizing, cost-consequence). Basic interpretive skills and the definition of the incremental cost effectiveness ratio (ICER) will be provided.

Required Reading:
Drummond, 3rd edition chapter 2; 4th edition chapter 1.

Optional Reading:
Gold, chapters 1 and 2
There are a series of introductory articles in specific fields, for individual interests:

Session 2  Basic Mechanics of Cost-effectiveness Analysis

Concepts and Topics:
This session will provide the definitions and calculations of various ratios and measures. Construction of a simple CE analysis problem, with definitions of outcomes and perspectives, will be presented. We will also introduce the concepts of incremental (marginal) vs. average effects, analysis of choice of strategies, and the concept of dominance.

Required Reading (prior to session):
Drummond, 3rd edition: section 5.5 (pp. 126-130) and section 10.3 (pp. 326-329)
Drummond, 4th Edition: Chapter 4

Optional Reading:
Gold, chapter 3


Session 3 Cost-effectiveness and health care policy

Concepts and Topics:
This session motivates the study of cost-effectiveness by providing background on trends in health care cost growth and their implications for policy. Successful and failed attempts at using cost-effectiveness analysis to make resource allocation decisions in health care both in the US and in other countries are reviewed. The course will also discuss the philosophical and political barriers to using cost-effectiveness criteria to limit health care technology.

Required Reading (prior to session):

Optional Reading:

Homework Assignment:
Problem Set #1 due (Basic mechanics of cost-effectiveness analysis and ranking projects).

Session 4 Estimating Benefits and Outcomes

Concepts and Topics:
This session will describe various methods for measuring outcomes, or the effectiveness of various health care programs. The advantages and disadvantages of alternative measures (lives saved, life-years saved, quality adjusted life years, healthy-year equivalents, etc.) will be discussed. The distinction between functional abilities and quality of life will be presented.

Required Reading (prior to session):
Drummond, 3rd Edition. sections 5.1.1-5.1.3 (pp. 103-109)

Optional Reading:


Gold, chapter 4

Session 5  Measuring and Estimating Costs

Concepts and Topics:
This section will provide definitions of various types of costs (direct medical vs. direct non-medical vs. indirect) and appreciation of the differences in costs to be included in an analysis depending on perspective (patient, third-party payer, health system, and society). An introduction to standard cost accounting principles and definitions will be provided, and the differences and usefulness of cost-charge ratios vs. resource-based cost accounting schemes will be discussed. Examples of databases and data collection procedures for medical cost estimation will be described.

Required Reading (prior to session):

- Drummond 3rd edition, section 4.1 (pp. 55-72)
- Drummond 4th edition: Chapter 7


- Weinstein MC. Recommendations of the panel on cost-effectiveness in health and medicine. JAMA. 1996;276:1253-1258 full text

Optional Reading:
- Drummond, sections 4.3-4.4 (pp. 78-88)
- Gold, chapter 6

Session 6  Sensitivity Analysis, Analytical Methods

Concepts and Topics:
The use of sensitivity analyses as a tool for understanding important variables and testing the stability of results will be discussed. Incorporation of CE analyses for use in clinical or policy decision-making (e.g., individual comparisons, decision analysis, and simulation) will be discussed.

Required Reading (prior to session):

- Drummond, 3rd edition: sections 9.1-9.3 (pp. 277-289)

Optional Reading:
- Gold, chapter 8

Problem Set #2 due (Costs and outcomes).

Session 7 Discounting; Critical Review of CEA in the literature

Concepts and Topics:
This session will present the reasons for discounting both costs and benefits and describe current controversies over selection of appropriate discount rates. Issues regarding the inclusion of health care costs due to increased length of life will be presented. Principles of critical appraisal will be presented, and implications of the recommendation for using a “reference case” will be explored.

Required Reading (prior to session):
Drummond 3rd edition, section 4.2 (pp. 72-78) and section 5.1.4 (pp. 109-11)
Drummond 4th edition, section 7.2

Ubel PA. What is the price of life and why doesn’t it increase at the rate of inflation? Arch Int Med. 2003; 163: 1637-1641.

Optional Reading:
Gold, chapter 7

Session 8 Challenges and Controversies in CEA

Concepts and Topics:
This session addresses challenges to cost-effectiveness analysis, both in terms of a competing method to compute costs in relation to health outcomes (cost-benefit analysis) and from a broader political and social standpoint. The rationale for cost-benefit analysis will be reviewed and its drawbacks outlined. Next, the net benefit framework, a method using some of the strengths of cost-benefit analysis to the advantage of cost-effectiveness analysis, will be highlighted. Finally, the difficulties and paradoxes with performing and using cost-effectiveness analyses in the US will be discussed in the context of a volatile political climate, public fears of medical care rationing, and the need to moderate medical spending.

Required Reading (prior to session):


Optional Reading:

Homework Assignment:

  Problem Set #3 due.

Final Examination handed out: It is a take home exam.