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**CLRES 2120/HPM 2220**  
**Cost Effectiveness Analysis**  
9/3-10/01 2009  
(M, Th 3:00–5:00)  
PKVL 305A  
Phone contact: 412-692-4826

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Course Instructors:                      Email addresses:  
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Course objectives:

The purpose of this course is to provide an introduction to 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.

Course Requirements:

Problem sets (3)	50%
Final Exam	50%

Course Mechanics:

1 credit (2 hours/session, 1-2 sessions/week, for 5 weeks)

Required text:

Drummond ME, O'Brien B, Stoddart GL, Torrance GW. *Methods for the Evaluation of Health Care Programmes*, third edition. Oxford Medical Publications, Oxford 2005.

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

Aujesky D, Smith KJ, Cornuz J, Roberts MS. Cost-effectiveness of low-molecular-weight heparin for secondary prophylaxis of cancer-related venous thromboembolism. *Thrombosis and Haemostasis*. 2005; 93: 592-9.

Optional text (on reserve at Falk Library and the Institute for Clinical Research Education [Parkvale Building, 3<sup>rd</sup> floor]):

Gold MR, Siegel JE, Russell LB, Weinstein MC. *Cost Effectiveness in Health and Medicine*. Oxford University Press, New York, 1996.

Optional readings are placed on reserve at Falk Library and the Institute for Clinical Research Education [Parkvale Building, 3<sup>rd</sup> floor]).

Note: There will be no class on Monday, September 7th (Labor Day holiday).

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Session 1	9/3	Introduction, Economic and Social Foundation of CE Analysis	Roberts
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**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 review examples of appropriate use from the literature, define various cost analyses (cost benefit analysis, cost effectiveness analysis, cost utility analysis), and describe common misuse (cost minimizing, cost-consequence).

**Required Reading:**

Drummond, chapters 1 and 2

Doubilet P, Weinstein MC, McNeil BJ. Use and misuse of the term "cost-effectiveness" in medicine. *NEJM*. 1986; 314: 253-256.

**Optional Reading:**

Gold, chapters 1 and 2

**REMINDER: No class on Monday, September 7**

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Session 2	09/10	Basic Mechanics of Cost-effectiveness Analysis	Smith
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**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):**

Detsky A, Naglie IG. A clinician's guide to cost-effectiveness analysis. *Annals of Internal Medicine*. 1990; 113: 147-154. (Read this one first.)

Drummond, section 5.5 (pp. 126-130) and section 10.3 (pp. 326-329)

Aujesky D, Smith KJ, Cornuz J, Roberts MS. Cost-effectiveness of low-molecular-weight heparin for secondary prophylaxis of cancer-related venous thromboembolism. *Thrombosis and Haemostasis*. 2005; 93: 592-9.

**Optional Reading:**

Gold, chapter 3

Eisenberg J. Clinical economics: a guide to the economic analysis of clinical practice. *JAMA*. 1989; 262(20): 2879-2886.

Weinstein MC, Stason WB. Foundations of cost-effectiveness analysis for health and medical practices. *New England Journal of Medicine*. 1977; 296: 716-721.

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Session 3 09/14 Estimating Benefits and Outcomes

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Roberts

**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, sections 5.1.1-5.1.3 (pp. 103-109)

**Optional Reading:**

Guyatt GH, Feeny DH, Patrick DL. Measuring health-related quality of life. *Annals of Internal Medicine*. 1993; 118: 622-629.

Patrick DL, Deyo RA. Generic and disease-specific measures in assessing health states and quality of life. *Medical Care*. 1989; 3(Supplement): S217-S232.

Gold, chapter 4

Smith KW, Avis NE, Assmann SF. Distinguishing between quality of life and health status in quality of life research: a meta-analysis. *Quality of Life Research*. 1999; 8: 447-59.

Tsevat J, Weeks JC, Guadagnoli E, et al. Using health-related quality of life information: clinical encounters, clinical trials, and health policy. *Journal of General Internal Medicine*. 1994; 9: 576-582.

**Homework Assignment:**

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

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Session 4 9/17 Measuring and Estimating Costs

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Smith

**Concepts and Topics:**

This section will provide definitions of various types of costs (direct vs. indirect, intangible) and appreciation of the differences in costs to be included in an analysis depending on perspective (patient, physician, 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 hospital level, provider level and government level claims databases will be described.

**Required Reading (prior to session):**

Drummond, section 4.1 (pp. 55-72)

Finkler S. The distinction between costs and charges. *Annals of Internal Medicine*. 1982; 96: 102-109.

**Optional Reading:**

Drummond, sections 4.3-4.4 (pp. 78-88)

Gold, chapter 6

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Session 5 9/21 Sensitivity Analysis, Analytical Methods

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Roberts

**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, simulation) will be discussed.

**Required Reading (prior to session):**

Drummond, sections 9.1-9.3 (pp. 277-289)

**Optional Reading:**

Gold, chapter 8

Pauker SG, Kassirer, JP. Medical Progress: Decision Analysis. *NEJM*. 1987; 316(5): 250-258.

Drummond M, Torrance G, Mason J. Cost-Effectiveness League Tables: More Harm than Good? *Social Science and Medicine*. 1993; 37: 330-40

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Session 6 9/24 Discounting; Critical Review of CEA in the literature

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Roberts

**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, section 4.2 (pp. 72-78) and section 5.1.4 (pp. 109-11)

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

Keeler EB, Cretin S. Discounting of life-saving and other nonmonetary effects. *Management Science*. 1983; 29: 300-306.

Drummond MF, Richardson WS, O'Brien BJ, Levine M, Heyland D. Users' guides to the medical literature. XIII. How to use an article on economic analysis of clinical practice. A. Are the results of the study valid? Evidence-Based Medicine Working Group. *JAMA*. 1997; 277(19): 1552-7.

O'Brien, Heyland D, Richardson WS, Levine M, Drummond MF, Users' guides to the medical literature. XIII. How to use an article on economic analysis of clinical practice. B. What are the results and will they help me in caring for my patients? Evidence-Based Medicine Working Group [published erratum appears in *JAMA* 1997; 278(13): 1064]. *JAMA*. 1997; 277(22): 1802-6.

Gold, chapter 9

## Homework Assignment:

Problem Set #2 due (The effect of quality-adjusting outcomes; options for assessing utilities).

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Session 7	9/28	Contingency Valuation, Willingness to Pay, Cost-Benefit Analysis	Roberts
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## Concepts and Topics:

The majority of the course has been devoted to developing separate measures of the outcomes (measured in clinical terms) and the costs (generally measured in monetary terms) and then creating the ratio of costs to outcomes. However, there are several methods that are more direct at determining a monetary value for a particular outcome. These methods can also be used as an alternative to utility assessments for assessing the strength of a person's preferences for an outcome. This session will describe Contingency valuation and willingness to pay, both methods for assessing value of health events in monetary terms. Valuing outcomes in terms of dollars allows for the construction of the cost-benefit ratio, which is described and evaluated.

## Required Reading (prior to session):

Drummond, sections 7.1-7.3 (pp. 211-230)

## Optional Reading:

O'Brien B, Gafni A. When Do the "Dollars" Make Sense? Toward a Conceptual Framework for Contingent Valuation Studies in Health Care. *Medical Decision Making* 1996, 16:288-99.

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Session 8	10/01	Case studies of cost effectiveness analysis in the literature	Donohue
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## Concepts and Topics:

## Required Reading (prior to session):

Drummond, chapter 3

## Optional Reading:

## Homework Assignment:

Problem Set #3 due.