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# PUBH 701

## Cost-effectiveness in Context

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Spring 2015  
Monday 2:30-4:25 PM  
2308 McGavran-Greenberg Hall

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### Overview

This course provides an overview of economic evaluation in health care. We focus on learning the following: 1) basic health economics (as it relates to medicine and public health) 2) economic evaluation methodology (focusing on cost-effectiveness analysis and critical appraisal of the literature) and 3) the potential use (and problems) of economic evaluation in decision-making. This is an introductory course that builds on basic knowledge of population health politics/policy, epidemiology and statistics. It is a good preparatory course for those who may go on to participate in research that involves economic evaluation of health interventions.

### Goals

By the end of this course, students will have accomplished the following:

1. Understand the meaning of “value” in health care and basic economic principles that relate to assessing value.
2. Understand the political controversy surrounding the use of cost-effectiveness analyses to inform decision-making.
3. Describe (and know it when you see it) the different types of economic analyses (e.g., cost-benefit analysis vs. cost-utility analysis).
4. Understand the methodology used to conduct a cost-effectiveness analysis. This includes understanding the meaning of analytic “perspective”, understand basic modeling (what it is and how it is done), understand the range of outcomes reported in economic analyses (e.g., DALY, QALY), understand how to read a “cost-effectiveness” plane and define “willingness to pay.”
5. Become proficient in the critical appraisal of cost-effectiveness analyses.
6. Describe the ethical (and political) controversies related to considering “value” or economic analyses in various levels of decision-making: healthcare policy (or public health funding), clinical-practice guidelines and individual patient-provider encounters.

### Requirements

- **You really must attend class.** If you *have* to be absent, please send me a quick note before that session (see below under “evaluation”).
- **There is no required textbook** (see below for suggested texts). All required reading will be posted on Sakai at least one week in advance. I will expect that you have read and could answer questions (or ask questions) about these readings in class.
- You **do not need to know how to use modeling software** or any other statistical software to succeed in this course, nor will we learn how to use modeling software. The technical details related to this are beyond the scope of this course.

## Evaluation

**1. Participation (40%)** - This is primarily a discussion class, not a lecture and memorization class (although some initial sessions will be primarily lecture...). If you are not present, then you can't truly participate. "Participation" means that you have read and thought about the readings *before* class and are prepared to ask questions (to me, to guest speakers, and to each other in small groups). Participation is not assessed by the *quantity* of your comments, but more so by the consistency and quality of your participation (e.g., you really listen to other comments, make relevant points about the topic and ask good questions, and don't stare at your computer screen for entire class sessions...). Offering lots of opinions that are not backed by solid rationale may not be very helpful.

We will have a brief "health-economics in the news" session at the beginning of each class (similar to the Prevention course). There will be no sign-up; the expectation is that one or two students will provide a very brief description of a health economics related issue reported in the "news" (e.g., NY times, npr, any journal) during the first 15 minutes or so. This counts as participation.

**2. Group Work (20%)** - We will form (informal) learning groups during the first or second class session. The goal is to pair clinical-focused and non-clinically focused students to encourage and facilitate multi-disciplinary active learning. There is not a group activity every week. For some sessions, groups may consider questions related to political or methodological controversies surrounding economic analyses, and report "answers" to questions to the class. Groups will also work together to complete risk-of-bias assessments for three assigned cost-effectiveness articles. One person in the group will volunteer to be a "scribe" and synthesize individual responses to risk-of-bias domains on a critical appraisal template. The group will then email me the "final" version, along with a very brief paragraph that describes whether group members debated about a particular domain (or not) and whether there was consensus about the overall risk-of-bias assessment. This will be due the same day as class, but not necessarily during class (e.g., you could send it after class if you want to spell-check it and make sure that it is coherent). Preparing for this ahead of time will make the process much more efficient (and more fun). We will complete one of these as a large group in class; an example will be posted on Sakai before assigning this as group work. Small groups will present an overview of the last article assigned for critical appraisal during the one of the last class sessions. Groups will each review and critically appraise a separate article that relates to the same public health program (e.g., obesity); we will then "rank" interventions and determine which ones we might want to allocate resources to. Further details will be given in class and posed on Sakai.

**3. Individual Cost-effectiveness paper ("research protocol") 40%** - Each student will develop a "research protocol" (e.g., a proposal to conduct a cost-effectiveness study of any health intervention you find interesting). Detailed instructions related to this will be provided during the second or third class session (e.g., format, references, timeline, helpful hints, etc.). Briefly, this will involve choosing a public health or clinical problem (and "base-case") and two alternative interventions to address this problem; you will then propose a set of methods that can be used to determine which intervention is the better "value." I will ask you to start thinking of a potential topic early in the course; however, it is not efficient to start diving into this paper until we've discussed the basic methods of cost-effectiveness analyses. The format will be (roughly) similar to a research protocol that is published in a journal or developed for a grant proposal. This will be due in three sections:

**Part 1: Introduction:** Background on the topic/intervention (e.g., burden of disease, burden of costs related to natural history of the disorder and to the available interventions; clear and concise identification of the controversies surrounding the interventions; rationale for how the proposed analysis might inform decision-making). Approximately 2-3 pages, double spaced.

**Part 2: Proposed Methods:** Including perspective of the analysis, plan for identifying data related to model inputs, very crude preliminary model (hand drawn or computer assisted); anticipated challenges and how you might deal with them. Approximately 3 pages double spaced (not including drawing of model).

**Part 3 (Final Proposal):** Revised version of Parts 1 and 2 (after incorporating my feedback), and a one paragraph "summary" that highlights the problem and how the proposed analysis will address the problem.

For "extra credit" (10 points) you could add one of two additional sections: 1) preliminary table of inputs (at least 7) related to

the main “costs” of intervention A vs. intervention B (this would require some targeted searching to find published “costs of healthcare interventions”, we will go over some of these sources in class) or 2) preliminary table of inputs related to the “benefits” and “harms” of intervention A vs. intervention B (this would require some targeted PubMed or google scholar searching to find published estimates of intervention efficacy/effectiveness and harms- usually reported in systematic reviews or trials).

**Grading:** I will let you know if I have concerns about your participation or quality of your work, and provide you with suggestions or support as needed. You may also ask for more specific feedback in or out of class. Possible grades include: H, P, LP, F. You will pass if you accomplish the “goals” for this course (described above), which are assessed via class participation, group work and your paper. To receive Honors, one must: (1) participate actively, demonstrating that you have read all required readings and have thought about them; (2) attend all class sessions (unless we have discussed unavoidable absences); and (3) write an outstanding research protocol for a cost-effectiveness analysis, including being responsive to initial feedback and making edits appropriately; and (4) find ways to make further contributions to the class’s understanding of “value” in health care (examples: “in the news” comments, commenting thoughtfully in class, reading “recommended” as well as “required” papers, looking up and reporting to class on questions that come up, etc.). You do not need to read or purchase the recommended texts below to receive Honors.

## Recommended Texts

### 1. Gold MR, Siegel JE, Russell LB, Weinstein MC. *Cost-effectiveness in health and medicine*. 1996

This is the “gold standard” in terms of methodology and theoretical basis for cost-effectiveness analyses. However, it is quite dated and is in the process of being updated and revised. A used copy would be a good buy- and perhaps helpful when writing your paper. We will read portions of this book that were summarized in a JAMA series several years ago. Some of the sections related to theory are quite dense; students with a background in undergraduate economics have liked these sections.

### 2. Drummond MF, Sculpher MJ, Torrance GW, O’Brien BJ, and Stoddart GL. *Methods for the Economic Evaluation of Health Care Programmes*. Third Edition. 2004

This book is not so much an “introductory” text; however, it does give a good overview of methods related to various types of economic analyses. This would be a good text for those who intend to participate in research that includes economic analyses and want additional preparation for some “hands-on” experience.

### 3. Hunink MGM, Weinstein MC et. al. *Decision Making in Health and Medicine: Integrating Evidence and Values*. Second Edition. 2014

This is an excellent book; it is very readable and not too technical. Most examples seem to be focused on clinical scenarios and so this may be less accessible to students who do not have a clinical background. It also covers some topics that most of you have had in epidemiology and other courses (e.g., overview of probabilities and interpreting diagnostic test performance). I have just purchased this new second edition and will be reading this throughout the course and considering whether it should be “required” next year.