

**PUBH 751: Critical Appraisal of the Health Literature
Fall 2006**

Mondays 2-3:50 pm

1301 McGavran-Greenberg

Instructors:

Russ Harris, MD, MPH

Gerald Gartlehner, MD, MPH

Ian Buchanan, MD, MPH

Halle Amick

This is a 2-credit course that will continue into the spring (another 1-credit). It is meant to complement the introductory epidemiology and biostatistics courses, as well as the prevention course. It will be taught primarily in a group discussion format.

It is absolutely essential that each week's reading be done before class. After an initial introductory epidemiology reading (over the first 2-3 weeks), many of the remaining sessions involve reading and discussing a methodologic paper, and then carefully reading a single research study, completing a structured form that includes data from the study as well as your own judgment. Among the key goals of the course are for you to develop your eye for seeing potential biases and flaws (and positive aspects) in the study, assessing their importance, and improving your judgment at determining what true information can be extracted from the study. These skills take time to develop – we hope you will consider taking the course in the spring, when we will work to reinforce these skills and then move on to other types of studies.

Please check the course Blackboard website for weekly reading assignments and further information about the course during the semester.

Critical appraisal is an important skill that requires (1) a thorough understanding of epidemiology and biostatistics; (2) the patience to read a study carefully, determining the degree to which its results are threatened by bias and/or random error; and (3) the judgment to extract the likely truth from the study, the degree to which its results are not explained by bias and/or random error. Critical appraisal is not a simple exercise in classifying studies into either “right” or “wrong”. The study's results must be interpreted in the context of other information bearing on the question addressed.

General Learning Objectives:

At the end of this course (one year), students should be able to:

1. Discuss the idea of critical appraisal;
2. Use critical appraisal in their Master's Papers;
3. Critically assess the magnitude and direction of systematic error (bias) and random error (precision) in individual studies in healthcare;
4. Extract from studies the (true) information content separate from the error;

5. Combine the information from several studies (and from other types of evidence) to gain the best current understanding of what the evidence says;
6. Wisely decide when it is appropriate to extrapolate beyond the evidence to make appropriate decisions to improve the health of individuals and populations;
7. Make appropriate use of evidence together with other considerations in making optimal decisions to improve the health of individuals and populations.

Grades: (we expect everyone to do well)

1. 60% of the grade is from in-class participation in each class (including, when appropriate, accurately completing the “evidence table” for the study to be discussed).
 - a. [Note: evaluation of participation is not based entirely on the volume of comments made by a student. Excellent participation also involves the quality of comments, including their thoughtfulness and the degree to which they demonstrate that the student has not only done the expected reading but has also gone beyond this to read and think more deeply.]
 - b. [Note: we do not keep attendance, but we do sit down after each class and make a note of the students who demonstrated that they clearly did the reading and thinking ahead of time.]
2. 40% of the grade is from a “Final Exam”. An article will be distributed 1-2 weeks before the end of the class. The assignment is to write a 3-4 page critical appraisal of the article, due at the beginning of the last class. (We will discuss the article during the last class.)

To be considered for Honors, a student must score exceptionally well on the critical appraisal paper, and also participate at a level beyond that expected for all students.

Date	Faculty Leader	Content	Readings
Aug 28	Harris (Gartlehner and Buchanan away)	<ul style="list-style-type: none"> ▪ Intro: What is Critical Appraisal? ▪ Discuss/hand out Fletcher Ch 1 ▪ Housekeeping ▪ Discuss RCT 	<ul style="list-style-type: none"> ▪ Go over architecture of an RCT ▪ Fletcher, Ch 1: bias and chance ▪ Heart Outcomes Prevention Evaluation (HOPE) 2 Investigators. N Engl J Med 2006;354:1567-77 ▪ Wald NJ et al. Arch Int Med 1998;158:862-867
Sept 11	Harris (Gartlehner away)	<ul style="list-style-type: none"> ▪ The idea of causation ▪ Types of epidemiologic studies, especially cohort and RCT ▪ Epidemiologic measures 	<ul style="list-style-type: none"> ▪ Rothman, Ch 2, What is Causation? (p 8-23) ▪ Rothman, Ch 3, Measuring Disease Occurrence and Causal Effects (p 24-56) ▪ Rothman, Ch 4 (p57-72): Types of Epidemiologic Study – cohort

			and RCT
Sept 18	Harris (Gartlehner away)	<ul style="list-style-type: none"> ▪ Overview of bias ▪ Cohort studies – design and example 	<ul style="list-style-type: none"> ▪ Rothman, Ch 5, Biases (p94-112) ▪ Cohort Study example
Sept 25	Harris (Gartlehner away)	<ul style="list-style-type: none"> ▪ RCT – design and example 	<ul style="list-style-type: none"> ▪ Fletcher, Ch 8 (p 125-145) ▪ Example: WHI. JAMA 2002;288:321-333.
Oct 2	Harris	<ul style="list-style-type: none"> ▪ Selection bias ▪ External validity ▪ Getting the words right with other courses 	<ul style="list-style-type: none"> ▪ Selection bias – cohort studies ▪ External validity article ▪ Example article(s)
Oct 9	Harris	<ul style="list-style-type: none"> ▪ Confounding ▪ Example 	<ul style="list-style-type: none"> ▪ Confounding – cohort studies ▪ Examples
Oct 16	Gartlehner	<ul style="list-style-type: none"> ▪ Randomization errors ▪ Intention to treat (ITT) analysis ▪ Example 	<ul style="list-style-type: none"> ▪ RCT: the issues of randomization and ITT analysis ▪ Article on ITT and randomization errors ▪ Example article
Oct 23	Buchanan	<ul style="list-style-type: none"> ▪ Accuracy and reliability 	<ul style="list-style-type: none"> ▪ Measurement bias ▪ Example article
Oct 30 (Harris away)	Gartlehner	<ul style="list-style-type: none"> ▪ Subgroup analysis 	<ul style="list-style-type: none"> ▪ Article on subgroup analysis ▪ Example article
Nov 6	Harris	<ul style="list-style-type: none"> ▪ Cross-sectional studies 	<ul style="list-style-type: none"> ▪ Cross-sectional article ▪ Example article
Nov 13 (Harris away)	Gartlehner	<ul style="list-style-type: none"> ▪ Systematic reviews 	<ul style="list-style-type: none"> ▪ Systematic review article ▪ Example article
Nov 20	Gartleher	<ul style="list-style-type: none"> ▪ Systematic reviews 	<ul style="list-style-type: none"> ▪ Systematic review article ▪ Example article
Nov 27	Harris	<ul style="list-style-type: none"> ▪ Case control studies 	<ul style="list-style-type: none"> ▪ Case control studies reading ▪ Example ▪ Hand out “examination article” [students will write a critical appraisal essay (3-4 pages) before last class]
Dec 4	Harris Last class	<ul style="list-style-type: none"> ▪ Discussion of critical appraisal exam in class 	<ul style="list-style-type: none"> ▪ Discuss critical appraisal exam in class