

PUBH 750

Strategies of Prevention for Clinicians

Fall 2017

Course Credits: 3

Class sessions: Tuesday/Thursday, 3:30-4:50 pm

McGavran Greenberg 2308

Course Instructor: Cindy Feltner, MD, MPH (and guests)

Introduction to the course:

This is a course in evidence-based prevention, designed for students with a background in clinical medicine. Our goal is to encourage students to think critically and analytically about (1) the priority prevention needs of populations of people, (2) the net benefit (i.e., benefits minus harms) of various prevention strategies that could meet those needs, and (3) ways in which appropriate priority prevention strategies might be implemented. To facilitate these goals, we will help you develop an approach to identifying priority prevention needs and appropriate prevention strategies, considering evidence about benefits, harms, and costs. We hope that this critical way of thinking, these “habits of the mind”, will spill over into forming ways of thinking about all health and health care issues – which we see as fundamentally the same as prevention issues.

To form these habits of the mind, we will be discussing a number of specific contemporary issues in prevention. We understand that many of the specific prevention issues that we will discuss (e.g., lung cancer screening, prophylactic treatment of latent tuberculosis, approaches to encouraging healthy lifestyle, various immunizations) will, within your lifetimes, become out-of-date and obsolete. What we expect to persist, and what we hope to encourage in this class, is the idea that improving the health of the public requires that we in the medical community seek out relevant evidence, take a rigorous and skeptical approach to this evidence, carefully balancing potential benefits and harms, and communicate our findings to decision makers and to the public at large.

This approach to evidence involves analyzing the level of certainty of a body of evidence about the benefits and harms of adopting a particular prevention strategy, analyzing the potential magnitude of net benefit (i.e., benefit minus harm), and analyzing such other relevant factors as cost, competing priorities, public opinion and preferences/values. The approach to what to do with the evidence involves synthesizing all these factors into a rational recommendation, and communicating that recommendation effectively to decision makers and the public. The synthesis and recommendation should also consider how much evidence is needed, under various conditions, before recommending a strategy. We need to recognize when the evidence is insufficient to make a reasonable decision, identifying the need for specific research. We also discuss theories of health behavior and their use in developing new interventions (i.e., in the absence of evidence or as a complement to limited evidence) that can then be tested in formal ways.

Thus, it is less our interest to get you to take a stand on the “big issues” of prevention today than to help you develop a rational approach to critically analyzing the prevention (and health) issues of tomorrow.

The course confronts the tension between incomplete (or negative) evidence on the one hand and our wish to act to reduce suffering on the other. How certain do we need to be that we are doing more good than harm before we act? What about costs? Even if an intervention provides some degree of reduction in the burden of suffering from a condition, should we use it if it is very

expensive? We examine these issues at both the individual (e.g., clinical interventions) and the population (e.g., policy-making) levels. As you will come to see, all prevention requires population-level thinking.

In addition to the themes above, other themes and tensions run throughout the course, as they run throughout broader discussions about prevention and health care. Some of these include the following: population vs. individual level interventions; the influence of poverty, class, ethnicity, and race on the burden of disease (the social determinants of health); the problems with actually delivering preventive services that we know work; the problem of demand for preventive services that do not (or may not) work; the need for services to be cost-effective as well as effective; the need to base action on evidence about health outcomes rather than intermediate outcomes; the problems of labeling people as “high risk”; the harms of “overdiagnosis” and “over-treatment”; and the “quality” of preventive care in actual practice (overuse, underuse, and misuse). These are issues that run through the health care system, not just preventive care. (Note that the word is “preventive”, **not** “preventative”.)

We encourage critical thinking in this class. We are not trying to sell you a particular view of prevention – although we do want you to understand basic principles. In the end, we want to engage you in a discussion that we find fascinating. We hope you will continue to discuss these issues with us and with others for years to come.

Non-judgmental discussion is a priority in this class. Some of the issues we discuss may raise your ideological beliefs (e.g., individual vs. corporate responsibility for obesity; the “right” to health care). We expect that everyone will listen respectfully to the views of others and will, even more, consider the validity of these views. We expect people (faculty as well as students) to base what they say on evidence rather than on emotion. We ask you to be prepared for each class. You will get out of the class what you put into it.

II. Course Learning Objectives:

By the end of the course, students will be able to;

1. define prevention, considering one definition as the appropriate reduction of risk in individuals and populations;
2. define “risk” in several different ways;
3. explain how to assess the “burden of suffering” from various health problems in a specific population;
4. describe strategies for prevention, including those that are commonly thought of as “individual-level” (chemoprevention, screening, counseling, healthy lifestyle promotion, immunization, individual lifestyle change) and those that are considered “population-level” (healthy lifestyle, public education, and policy) approaches;
5. explain the social determinants of health
6. describe the use of “theory” (theoretical approaches to health behavior) in developing interventions and methods to evaluate the effectiveness of interventions
7. describe how even “individual-level” strategies really depend on population thinking;
8. explain the difference between efficacy, effectiveness, efficiency, and cost-effectiveness and describe how to evaluate the efficacy of a preventive service;
9. assess the evidence base for prevention guidelines (recommendations for screening, counseling, healthy lifestyle promotion, immunization, and chemoprevention) for children and adults (both older and younger);
10. understand the need to weigh potential benefits against potential harms and costs of all preventive services, and explain why this is difficult;
11. discuss the role of clinicians in promoting prevention through public education and policy-making; and

12. discuss gaps in the quality (overuse, underuse, misuse) of preventive care and effective approaches to implementing evidence-based preventive services in clinical practice and within communities.

Required course textbook:

None. We have on-line reading requirements and recommendations on our Sakai site. You should know how to access online the prevention guidelines of the US Preventive Services Task Force: <http://www.uspreventiveservicestaskforce.org> and also the Task Force on Community Preventive Services <http://www.thecommunityguide.org/> Another helpful evidence-based site for cancer prevention is the NCI's PDQ Board for Screening <http://www.cancer.gov/cancertopics/pdq/screening> and for Prevention <http://www.cancer.gov/cancertopics/pdq/prevention>

III. Expectations of students:

1. This is primarily a discussion class, not a lecture class. You are expected to attend class, to have read the required readings before class, and to actively and thoughtfully participate in class discussions (**50% of the grade is class contribution, demonstrating that you have read and thought about the articles beforehand – a portion of this grade will come from your group readiness assessment test grades and small-group participation, described below**). Contribution is defined more by the quality than the quantity of your comments. To actively contribute is not just to speak often, but to speak thoughtfully, making relevant points or asking relevant questions that move the discussion in useful and interesting ways. All students are expected to listen carefully and to respect the opinions or questions of others. Giving an opinion without a rationale may not be very useful to the class's thinking. Asking a good question, or seeking to organize the discussion, can sometimes make a large contribution. To receive a grade of "Honors", students must demonstrate reading and thinking beyond the "required" level. We understand that some students are not as comfortable speaking up as others. We will look for ways during the class to allow you to say what you think.
2. All students are expected to have **read and thought about the required readings before each class. We have designed class activities that depend on your preparation.**
3. Sometimes there will be "recommended readings".
4. We recognize that all students have much to offer in specific areas. We encourage students to let us know of their special interests and areas of expertise so that we can find ways for them to share their understanding with the entire class.
5. **Grading:** We do not grade "on the curve". That is, we do not have any defined percentage of students who will receive Honors or Pass. (We don't expect anyone to fail. If you are not doing well, you will hear from us – or please see Cindy if you aren't getting the ideas or have some other problem that affects your class participation.) This is a "competency"-driven class; you will pass if you achieve the basic competencies that we require (see learning objectives above). To receive Honors, one must: (1) participate actively, demonstrating that you have read the readings and have thought about them; (2) attend class at least 90% of the time; and (3) write an outstanding Prevention Paper (see below); and (4) find ways to make further contributions to the class's understanding of prevention (examples: "in the news"

comments, commenting thoughtfully on readings “recommended” as well as “required” papers, looking up and reporting to class on questions that come up, etc).

IV. Team Based Learning Groups

We believe that students learn best when they are engaged and active in the process. We want to encourage and facilitate active learning as well as we can. To accomplish this, each person in the class will be a member of a small group, to be organized in Session #1. You will stay in these groups throughout the semester. The groups will be used primarily for one of two purposes: traditional Team Based Learning (TBL) (or TBL-like) sessions or small group discussion/activity.

TBL Sessions

As you may know, there are three main components to a TBL session: (1) individual Readiness Assessment Test (known as iRAT), (2) group Readiness Assessment Test (gRAT), and (3) Application. The iRAT and gRAT are identical tests. In this class they will be short (probably no more than 5 to 10 questions). The RATs are based on required reading material. To do well on them, YOU MUST READ THE MATERIAL ASSIGNED. At the beginning of a TBL session, everyone in the team takes the iRAT on his/her own (with no assistance, and it's 'closed book'). Then each team takes the exact same test together (still 'closed book' but the teams discuss and come up with the answers together). Each member of the team will receive the same grade on the gRAT. iRAT and gRAT grades are factored into your class contribution grade.

The gRAT is followed by an Application. The Application is a group activity designed to allow you to apply the information that was the basis of the RATs. These activities will be designed to promote deeper thinking and intra-team discussion. Often, they will conclude with a question or dilemma to which each team will respond. TBL sessions conclude with large group, inter-team discussion.

V. The Prevention Paper:

In pairs** [see *note at end of paper description*], you will write a 12-14 page (double-spaced) paper, in 3 sections (**50% of the class grade**). For the paper, you and your partner will first choose: (a) a health problem that leads to a substantial burden of suffering (see the list of suggested topics for papers); and (b) a defined population (e.g., men ages 50-70; women of child-bearing age; cigarette smokers; children of Hispanic parents; low income families; people attending primary care clinics; etc). You must hand in (with your partner) a brief statement of your chosen condition and defined population by **the specified date**. Note that the population, setting, prevention strategy does not have to be applicable to the U.S. You should turn in Sections 1 and 2 together **before Thanksgiving break**, and Section 3 near the end of the semester. You may revise Sections 1 and 2 and turn them in together with Section 3 if you wish (not required). Revised sections will be re-graded and the scores for those sections may be increased if significant improvement is noted.

Most importantly, the paper should be written in the spirit of the class including: critical appraisal of articles, population thinking, and critical thinking about your target condition. Refrain from becoming an advocate – this is a scientific analysis.

Again, the paper will contain 3 sections (to be turned in separately, as described below):

Section 1. Burden of suffering (2-3 pages)

This section should include the following:

1. Describe the epidemiology of the health condition or problem you're addressing, including type and severity of the condition (i.e., its impact on morbidity or mortality for individuals and groups), number (and proportion) of people affected, incidence/prevalence rates both of risk factors for the condition (if known) and of the condition itself, and trends over time. Can you identify a group of people who carry a large proportion of the total burden? This last question is a critical one – from Geoffrey Rose – **from where do the “cases” come?** If we can identify that subpopulation that carries the predominant burden, then this might suggest effective and efficient prevention strategies.
 - ***Be critical (in the analytic sense) of the data sources. Be especially careful of secondary data sources from voluntary health associations that may be biased toward overstating the burden for “their” condition. Describe where the data on burden come from, how reliable they are, and what their limitations are. It is okay to say we don’t know the burden of suffering exactly (often true) because of incomplete or poor data. DO NOT fall into the trap of hyperbole – overstating the burden. It is better to say we don’t know or we aren’t sure than to make a wild guess. (On the other hand, educated guesses are not only permitted but necessary – as long as we understand the potential error in the estimate.)***
2. Describe the population of interest, including size of the population (if known). Include description of subpopulations at higher risk because of known risk factors. Also include any relevant information about health disparities among racial or ethnic groups, if available.
3. If data are available, describe the health problem at the population level in terms of disability-adjusted life years or disability-adjusted life expectancy. This may be hard to find for many problems.

Section 2. Prevention Strategies (5-6 pages)

This section should include the following:

1. Describe the primary prevention strategy or strategies that could be applied to this health problem (e.g., counseling, healthy lifestyle promotion, screening, chemoprevention, immunization, public education, policy). If more than one strategy is possible, mention the potential of each to reduce the burden of suffering that you have documented in Section 1. Then choose 1-2 (prefer 2 rather than 1) strategies as your focus. When more than 2 are possible, give a rationale for your choices.
2. For each chosen strategy, describe and critically appraise the strongest evidence for “efficacy” (using the strategy under ideal circumstances) and “effectiveness” (using the strategy under usual circumstances), in terms of:
 - the relative and absolute reduction in the burden of suffering (benefits);
 - the potential harms;
 - the likely costs (both economic and opportunity);
 - the uncertainties of the evidence for benefits and harms; and
 - the studies used to find this information and their strengths and weaknesses.

Usually students will use a “best evidence” approach (as opposed to a “systematic” approach) to answering these questions. We suggest that you search for high quality

studies or systematic reviews to answer the question you are asking. You may need to examine lower quality evidence if there is no higher quality evidence. We suggest you choose a topic that allows you to evaluate at least some reasonable evidence.

3. Prepare an “Outcomes Table” if possible, using a hypothetical group of people from your population. The “Outcomes Table” should have both benefits and harms, and should describe what we would expect (from the evidence) to happen if the hypothetical population were to adhere to one or another prevention strategy (e.g., number of positive tests, number of people injured by the work-up, number of people with disease detected, number of people whose lives were extended, etc.). Calculate number needed to screen, number needed to treat, or number needed to harm if possible.
6. If you can find cost-effectiveness data on your topic, please include it, describing the perspective taken (societal, payer, etc.) and the comparisons made (interventions are more or less cost-effective, compared to something else).
7. Conclude this section with a paragraph summarizing your findings, stated in terms of your assessment of the quality of the literature (good, fair, poor) and the magnitude of net benefit (benefit minus harms) (substantial, moderate, small, zero/negative).
8. Again, be critical. You are searching for the truth, not trying to sell something.

Section 3. Guidelines, Implementation, and Future Research (4-5 pages)

This section should include the following:

1. If you wish, you may start this section with a revised version of the first and second sections, revised based on suggestions and comments from the course directors. This is not required and should be used especially in situations where the students believe that they can markedly improve their initial version.
2. A discussion of the available guidelines for the problem: what the guidelines say, to whom the guidelines apply (target population), who developed the guidelines, when they were released, how they were developed (consensus process, systematic evidence reviews, etc.), and who is the target audience.

Depending on your topic, you may be able to find some/most of this information at www.guideline.gov (the National Guideline Clearinghouse). The US Preventive Services Task Force recommendations are found at: <http://www.uspreventiveservicestaskforce.org> and the Task Force on Community Preventive Services' recommendations at <http://www.thecommunityguide.org/>. Another helpful evidence-based site for cancer prevention is the NCI's PDQ Board for Screening <http://www.cancer.gov/cancertopics/pdq/screening> and for Prevention <http://www.cancer.gov/cancertopics/pdq/prevention>. You may also want to check www.cochrane.org (or the Cochrane link through the Health Sciences Library) for Cochrane Reviews; some address prevention topics.

3. A discussion of the current level of implementation of the recommendations in the guideline(s) – how many people in the target population have received the preventive service or what proportion of the population has been reached by an educational strategy or similar measure of implementation (this may vary by topic). Hopefully, you can find evidence from studies about the degree of implementation.

4. A discussion of the problems, barriers, difficulties of implementing the recommendations and what you think it will take to get them implemented, especially focusing on the role of clinicians. Again, use evidence from research as much as possible in determining the barriers to implementation.
5. If there aren't any recommendations/guidelines for your topic because there aren't any strategies adequately supported by evidence, then describe the research that needs to be done to develop evidence of effectiveness. Briefly propose a research study, including the research design, who the eligible subjects would be, what the outcomes would be and how they would be measured, and what the difficulties might be in conducting such a study (e.g., it would take a gazillion people or a gazillion years or a gazillion dollars or all 3 to do this study). End with what you think should be done to decrease the burden of suffering for your problem, absent good data of effectiveness for the prevention strategy.

****NOTE:** Occasionally a student finds that his/her circumstances make it more difficult to write the paper with another person. If you feel that it would be difficult to write the paper with a class colleague, you must speak with Dr. Feltner to explain your situation and obtain permission to work independently. Note that one of the goals of this exercise is for students to learn to work as members of a small team, so we will not approve a request unless the benefits of independent work outweigh the benefits of working collaboratively with another class colleague.

Writing Rules for the Prevention Paper

We want you to become good scientific writers for two reasons: writing well helps you to (1) clarify your ideas and (2) clearly communicate those ideas to others.

Here are a few rules to follow:

1. A paragraph should include one main thought, not several. The first sentence is a topic sentence.
2. Write as much as possible in the active voice.
3. The word "data" is **plural** (e.g., "The data **are** from a national survey of Latino children.").
4. Don't use emphatic words, such as "very," "huge," "whopping," etc. These aren't appropriate in scientific writing; let the facts speak for themselves.
5. Avoid starting sentences with "It is [estimated, predicted, etc.]" or "It has been [found, shown, etc.]" unless the "it" clearly refers to something in the previous sentence. Be more specific about who did the estimating and how they did it.
6. Be careful about giving statistics in the form "up to XX people have this condition". The words "up to" usually mean that you are making an estimate that is likely on the high side, usually to make a point rather than to be as truthful as possible. We are not interested in exaggerating numbers to get attention. We are interested in getting as close as possible to the truth.
7. Public health professionals prefer the term "unintentional" in place of "accidental" and "crashes [events/collisions/etc.]" in place of "accidents" (if referring to motor vehicles). "Accidental" or "accident" implies randomness, unpredictability, and thus non-preventability.

8. Cite references using the International Committee of Medical Journal Editors (ICMJE) style in the reference list (www.icmje.org). We recommend you use a citation management software (one should be available for free via the Health Sciences Library).

Examples:

- (a) *Up to 6 authors*: Fiore MC, Novotny TE, Pierce JP, Hatziandreu EJ, Patel KM, Davis RM. Trends in cigarette smoking in the U.S. The changing influence of gender and race. JAMA. 1989;261:49-55.
- (b) *More than 6 authors*: Giovino GA, Schooley MW, Zhu BP, et al. Surveillance for selected tobacco-use behaviors - United States, 1990-1994. Mor Mortal Wkly Rep CDC Surveill Summ. 1994;43:1-43
- (c) *Book*: Miller WR, Rollnick S. Motivational Interviewing: Preparing People to Change Addictive Behavior. New York, NY: Guilford Press; 1991.

******Look at the example paper posted on the Sakai site******