

PUBLIC HEALTH 526
CANCER EPIDEMIOLOGY – 1.0 Credit
Spring Quarter 2007: March 27 – June 5, 2007

Time: Tuesday 6:00-9:00 pm

Location: TBD

Course Instructor (office hours by appointment):

Brian C.-H. Chiu, PhD
Associate Professor
Department of Preventive Medicine
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Guest Lecturers:

Peter Gann, MD, ScD, MPH, Professor, Dept. of Pathology, Univ of Illinois at Chicago
Susan Gapstur, PhD, MPH Associate Professor, Dept. of Preventive Medicine
Lifang Hou, MD, PhD, Assistant Professor, Dept. of Preventive Medicine
Bridget McCarthy, PhD, Research Associate Professor, Dept. of Epidemiology, Univ of Illinois at Chicago
Kathleen Rundell, PhD, Professor, Dept. of Microbiology-Immunology

I. Course Description

The purpose of this course is to review the basic concepts and issues relevant to cancer epidemiology. Specifically, this course will focus on interpreting cancer statistics, and describing the current state of knowledge regarding the etiology and risk factors for the major cancer sites. In addition, issues in research design and interpretation within the context of cancer epidemiology, as well as the molecular and cellular basis of carcinogenesis as it pertains to cancer occurrence in populations will be discussed. The course is appropriate for students who have an introductory knowledge of epidemiology. Previous study of cancer biology is helpful but not required.

II. Prerequisites

- Introduction to Epidemiology – PH 304 (or Medical Decision Making II)
- Permission of Instructor for non-MPH or non-MSCI majors

III. Course Objectives

After completion of the course, students will be able to:

- Identify important sources of cancer surveillance data and critically evaluate their use in research.
- Define national and international patterns in cancer incidence and mortality in populations.

- Describe the general principals of the molecular and cellular basis of carcinogenesis, and how they might affect the study of cancer risk in populations.
- Describe major hypotheses regarding cancer causation via environmental and genetic factors; discuss the importance of gene-environment interactions.
- Identify the established and important suspected risk factors for cancers of the breast, endometrium, cervix, prostate, lung, colorectum, pancreas, liver, and hematopoietic malignancies.
- Describe the strengths and weaknesses of various epidemiologic study designed for the study of cancer etiology.

IV. Teaching Format

New material will be presented in lectures. Homework assignments will be either handed in for evaluation, or will be discussed in class as outlined below. Students will be expected to read the assigned reading material prior to the lecture or the discussion. Participation in group discussion is mandatory.

V. Student Evaluation

- a) Class participation: The Instructor will prepare two discussion points for the following lecture. Students are expected to come to class prepared to take part in a classroom discussion of these or other issues they have identified in their readings. Participation will count towards 20% of the total grade. If you will miss a class, you must notify the Instructor in advance.
- b) Midterm quiz - The midterm quiz (30%) may consist of multiple choice, and short answer, and will be administered at the scheduled times. It will be open book/open note. Make up examination will only be given under extenuating circumstances and should be arranged in advance.
- c) Presentation – Each student will be expected to prepare a presentation on the epidemiology of a specific cancer site (e.g., thyroid, stomach, kidney, bladder, skin, oral cavity, esophagus, ovary, etc). This assignment will count towards 50% of the student evaluation.

VI. Class Material

- **Textbook:** Textbook of Cancer Epidemiology, Adami, H-O, Hunter D, and Trichopoulos D. (editors). Oxford: Oxford University Press. 2002.
- **Other supplementary readings will be provided by the Instructor.**

VII. Course Evaluation

The Programs in Public Health administer web-based course evaluations to students for each course near the end of the quarter. Your completion of both the unit (course) and faculty evaluation components is required; failure to complete either of the evaluations will result in an incomplete grade until the evaluations are submitted. You will be sent the web link and instructions via email later in the quarter. You will have about two weeks time to complete the evaluations before grades are submitted.

Spring 2007 Cancer Epidemiology

Session	Date	Topic (Instructor)	Reading
1	Tue 3/27	Introduction to Cancer Epidemiology - I <ul style="list-style-type: none"> • Course description (Chiu) • Theories of carcinogenesis (Rundell) • History of cancer epidemiology (Gapstur) 	Chapters 2 & 5
2	Tue 4/3	Introduction to Cancer Epidemiology - II <ul style="list-style-type: none"> • Source of data for cancer occurrence (Chiu) • Geographic and temporal trends in incidence/mortality (Chiu) • Cancer cluster investigations (Chiu) 	Chapters 1 & 5
3	Tue 4/10	Introduction to Cancer Epidemiology – III <ul style="list-style-type: none"> • Study designs (Chiu) • Molecular cancer epidemiology (Hou) 	Chapters 4 & 5
4	Tue 4/17	MIDTERM QUIZ Lung (Chiu)	Chapter 12
5	Tue 4/24	Prostate (Gann)	Chapter 18
6	Tue 5/1	Breast/Cervix (Gapstur)	Chapters 14-16
7	Tue 5/8	Brain/Colorectal (McCarthy/Hou)	Chapters 9 & 22
8	Tue 5/15	Liver/Pancreas (Gapstur/Chiu)	Chapters 10 & 11
9	Tue 5/22	Lymphoma/Multiple Myeloma (Chiu)	Chapters 24 & 25
10	Tue 5/29	Student presentations (I)	
11	Tue 6/5	Student presentations (II)	

Format for Student Presentations

- 1) Each student will select a unique cancer site that was not presented in class. Examples of different cancer sites with interesting etiologies include, but not limited to, thyroid, kidney, bladder, skin (melanoma or BCC/SCC), oral cavity, esophagus, ovary, endometrial, or acute or chronic leukemia.
- 2) To assure no overlap, we will discuss which cancer site each of you have selected in class on **April 24th**.
- 3) Each student will prepare an approximately 30 minutes presentation for their selected cancer site. The presentation should be prepared in power-point. Following each presentation will be a 10 minutes discussion so please be prepared to both ask questions as well as to address potential questions. The length of the presentation and discussion might need to be adjusted depending on the number of student enrolled in class.
- 4) Each presentation should include:
 - a) Descriptive epidemiology: mortality and incidence trends, variations by age, sex, race/ethnicity.
 - b) Historical perspective (if relevant).
 - c) Major risk factors: include both external and internal risk factors such as environmental, social, behavioral, lifestyle, diet, medical, genetic and physiologic. You might want to think about these in terms of modifiable vs. non-modifiable. If there are genetic associations are they high-penetrance vs. low-penetrance. In your presentation use results of existing studies that support the risk factors and think about the strengths and potential weaknesses of the studies.
 - d) Describe one future direction that addresses an unanswered question for your selected site-specific cancer.
- 5) If you have question or need direction, please contact Dr. Chiu who might refer you to someone who has more experience with that cancer site.
- 6) Please email a complete copy of your presentation to Dr. Chiu (bchiu@northwestern.edu) no later than **Monday May 28th**.
- 7) The presentation counts towards 50% of total class evaluation.