MPM 405 & EPI 205A - PRINCIPLES OF EPIDEMIOLOGY

Course Outline, Fall 2007
MW 11-12, F 11-1; 2020 Valley Hall

Instructors

Bruno Chomel, 1021 Haring Hall, 752-8112 (bbchomel@ucdavis.edu)
Haydee Dabritz, CA Dept. of Public Health, (haydee.dabritz@cdph.ca.gov)
Janet Foley, 2108 Tupper Hall, (jefoley@ucdavis.edu)
Ellen Gold, TB 169, 752-2446 (ebgold@ucdavis.edu)
Michele Jay-Russell, CDPH – Food and Drug Branch, (Michele.JayRussell@cdph.ca.gov)
Anne Kjemtrup, CA Dept. of Health Services (AKjemtru@dhs.ca.gov)
Jonna Mazet, Wildlife Health Center, 752-4167 (jkmazet@ucdavis.edu)
Woutrina Miller, 5309 VM3A, 219-1369 (wamiller@ucdavis.edu) (Course leader)
(Office Hours: anytime by appointment)
Brant Schumaker, VGAP (Theschu@ucdavis.edu)

MPM 405 (EPI 205A) deals with basic epidemiologic concepts and approaches to population health issues in veterinary and human medicine. The course covers a wide spectrum of topics, some of which (e.g., outbreak investigation, properties of tests) will be treated in more depth, while others (e.g., epidemiologic study design) will be introduced, with more emphasis in subsequent courses.

Course Learning Objectives

At the conclusion of the course, students will:

1. Understand and explain what epidemiology is and how it relates to other disciplines.

2. Understand and explain how epidemiology is used and applied.

3. Understand and be able to apply commonly used terms and methods of epidemiology:

   Rates, ratios, and proportions: Students will be able to define, derive, interpret, and apply incidence, prevalence, relative risk, odds ratios, attributable risk, case-fatality, and other specific rates, ratios, and proportions.

   Define and properly use terms to describe disease and disease transmission.

   Describe the conduct of and interpret data from an outbreak investigation.

   Define, derive, interpret, and apply test properties, including sensitivity, specificity, and predictive value.

   Define and discuss the relevant strengths and weaknesses of descriptive vs. analytic studies; experimental vs. observational studies; cohort studies, case-control studies, and cross-sectional studies. Given a specific study, students will be able to characterize it with respect to its basic design. Given a specific epidemiologic study question, students will be able to identify the study design most appropriate for answering the question and discuss the relative strengths and limitations of the chosen study design and why other designs are less appropriate.

Format

The course is based on lectures, discussions, textbook reading and exercises. Some exercises will be completed in class, while others must be completed before class. You are encouraged to work in groups on these take-home exercises, which must be turned in at the beginning of the discussion period. Keep a copy of the answers you turn in so that you can refer to it during the subsequent in-class discussion. Only the take-home exercises will be graded; the in-class exercises will not be graded. The lectures often will not follow the textbook; the text therefore serves as a supplement to the lectures.

Textbooks

All listed books are located on reserve in the Health Sciences Library (call numbers in parentheses).

Required:

Gordis, L. 2004. Epidemiology, Third Edition. Saunders, Philadelphia. ISBN 0-7216-0326-2.

Other general texts:

Ahlbom A, Norell S. 1990. Introduction to Modern epidemiology, 2nd Ed. Epidemiology Resources Inc, Massachusetts (WA105 A66).

Dohoo IA, Martin SW, Stryhn H. 2003. Veterinary Epidemiologic Research. AVC Inc, Charlottestown, PEI.

Fletcher RH, Fletcher SW, Wagner EH. 2005. Clinical Epidemiology. 4th Ed. Lippincott Williams and Wilkins, Philadelphia. (WA950 F57)

Hennekens CH, Buring JE. 1987. Epidemiology in Medicine. Little, Brown, and Co: Boston.

Kahn HA. 1983. An Introduction to Epidemiologic Methods. Oxford Univ. Press, NY. (WA5 M65)

MacMahon B, Trichopolous D. 1996 Epidemiology: Principles and Methods. 2nd Ed. Little, Brown and Co: Boston.

Martin, Meek and Willeberg. 1987. Veterinary Epidemiology.
Iowa State University Press. (SF780.9 M37)

Rothman, KJ, Greenland, S. 1998. Modern Epidemiology. 2nd Ed. Lippincott-Raven: Philadelphia.

Sackett DL, Haynes RB, Guyatt GH, Tugwell P. 1991. Clinical Epidemiology: A Basic Science for Clinical Medicine. 2nd Ed. Little, Brown and Co: Boston.

Schwabe CW, Riemann HP, Franti CE. 1977. Epidemiology in veterinary practice. Lea and Febiger, Philadelphia. (SF780.9 S38)

Smith RD. 1995. Veterinary Clinical Epidemiology: a problem-oriented approach. 2nd Ed. Butterworth:Heinemann: Boston, MA.

Thrusfield M. 2005. Veterinary Epidemiology. 3rd Ed. Blackwell Science, London (SF780.9 T78)

Grading

There are 3 examinations. Material from lectures, exercises, assigned reading and the discussion sections may be included in the examinations. Some of the exercises will be handed in and graded. The contribution of each to the final grade is as follows:

Exercises	20%
Examinations (3)	80%

Course grading is noncompetitive; course grades will be assigned based on mastery of the material. From past experience we expect that approximately 1/3 to 2/3 of students will receive A- or A, and 1/3 to 2/3 will receive B-, B or B+. Students that do not demonstrate mastery of the material will receive a grade of C or below.

MPM 405/EPI 205A Lecture Schedule 2007

Day	Date	Time	Subject	Text Chapters	Instructor
Th	9/27	11-1	Introduction. Epidemiology in action: Dynamics of disease transmission.	1,2	W. Miller J. Foley
M	10/1	11-12	Measuring disease frequency: Prevalence, incidence, and proportions; Crude, specific, and adjusted rates.	3, 4	W. Miller
W	10/03	11-12	Measuring disease frequency: Standardization of rates; Diseases in populations; Multiple determinants of disease.	6,16	W. Miller
F	10/05	11-1	Measuring disease frequency continued. In-class disease frequency exercise.		W. Miller B. Schumaker
M	10/ 8	11-12	Properties of tests: sensitivity & specificity. ****Homework 1 due****	5	W. Miller
W	10/10	11-12	Outbreak investigation: Procedures and examples; Attack risk tables and case-control approaches.	2	J. Mazet
F	10/12	11-1	In-class outbreak investigation exercise.		J. Mazet
M	10/15	11-12	Outbreak investigation and molecular epidemiology ****Homework 2 due****		M. Jay
W	10/17	11-12	Ecosystem health approaches in epidemiology.		W. Miller
F	10/19	11-1	**Examination I**		

M	10/22	11-12	Surveillance.for vector-borne diseases in CA.		A. Kjemtrup
W	10/24	11-12	Surveillance.	17,19	B. Chomel
F	10/26	11-1	In-class surveillance exercise.		B. Schumaker
M	10/29	11-12	Surveillance.		B. Chomel
W	10/31	11-12	Properties of tests: Predictive values; Multiple tests; True vs apparent prevalence; Gold standards.	5, 18	H. Dabritz
F	11/02	11-1	Properties of tests continued. In-class properties of tests exercise.		H. Dabritz B. Schumaker
M	11/05	11-12	Properties of tests: Sample size for Se/Sp; Likelihood Ratios; ROC. **** Homework 3 Due****		H. Dabritz
W	11/07	11-12	Sampling and sample size issues.	8, 20	W. Miller
F	11/9	11-1	In class exercise: choosing statistical tests.		B. Schumaker
M	11/12	11-12	Holiday		
W	11/14	11-1	**Exam II**		
F	11/16	11-1	Introduction to etiologic studies.	7-10, 13	E. Gold
M	11/19	11-12	Measures of effect.	11-12	E. Gold
W	11/21	11-12	Introduction to advanced topics in epidemiology.		B. Schumaker
F	11/23	11-1	Holiday		
M	11/26	11-12	Causal inference.	14	E. Gold
W	11/28	11-12	Clinical trials.		E. Gold
F	11/30	11-1	Precision, bias, and confounding. ****Homework 4 due****	15	W. Miller
M	12/03	11-12	Radiation and thyroid cancer.		E. Gold
W	12/05	11-12	Radiation and thyroid cancer continued.		E. Gold
F	12/07	11-1	**Examination III**		