

School of Public Health

Syllabus and Course Information



PubH 6390 Section 002 Interventions in Infectious Disease: What Works and Doesn't Fall Semester, 2017 (first half semester)

Credits: 1
Meeting Days: Thursday
Meeting Time: 3:35 pm - 5:30 pm
Meeting Place: Mayo D325
Instructor: Alan Lifson, MD, MPH
Office Address: 492 WBOB
Office Phone: 612-626-9697
Fax: 612-624-0315
E-mail: lifso001@umn.edu
Office Hours: By appointment

I. Course Description

Using a case-based approach, this course will discuss interventions to prevent or control infectious diseases on the local, national and international level. We will discuss different strategies that have been used, how effective they have been, and monitoring and evaluation strategies for assessing the impact of different control strategies. Students will also learn more about how to develop research proposals to assess outcomes of different control strategies.

II. Course Prerequisites

- PUBH 6320 Fundamentals of Epidemiology or PUBH 6341 Epidemiologic Methods, or a comparable class

Previous enrollment in PubH 6385 (Epidemiology and Control of Infectious Diseases, or a comparable class is preferred.

III. Course Goals and Objectives

This course will discuss different strategies that have been used to prevent or control infectious diseases, why certain approaches have been more or less successful, and how to design, implement, and evaluate programs to maximize effective policy and practice. Topics to be covered will include:

- Different control strategies for infectious diseases, including mass drug administration, screening, chemoprophylaxis of latent infection, treatment of disease, community health workers, immunization, partner notification, education and behavior change, infection control
- Disease surveillance and outbreak investigation as control strategies
- Social, cultural and political factors in determining success of intervention strategies
- Program evaluation and operational research
- Critical review of the medical literature
- Developing research proposals to design and evaluate intervention strategies

IV. Methods of Instruction and Work Expectations

Instruction for this course will utilize a variety of teaching approaches:

- A. Lecture: The course instructor will lecture on a general cross-cutting topic.
- B. Class discussion of articles in peer-reviewed literature: Students will be asked to critically read articles in the peer-review literature that describe an intervention or control strategy and how it was evaluated. Discussion of these articles will include addressing the following questions:
1. What is the research question this article is addressing? What is the underlying problem and why is it significant?
 2. What is the study design? What are the advantages and disadvantages of this design and is it appropriate for this question?
 3. What is the study setting? Who are the study subjects? How were they recruited?
 4. If a clinical or community trial, what is the primary intervention? If an observational study, what is the primary exposure? What are the other exposures and confounders?
 5. What is the primary outcome? What are the secondary outcomes?
 6. What can one conclude from this study? Are there any serious limitations or biases? What are the implications for public health?

Prior to each class discussion, students will be asked to fill out (in advance of the class discussion) a brief worksheet where each of the underlined points is addressed for each of the articles to be discussed. These worksheets should be handed in at the end of the class.

C. Written Assignments #1

Select a communicable disease of public health significance. Pick one country in which this disease is a problem. For this disease and country, write a 2 page paper (single space) plus an additional page with at least 10 references.

1. What is the incidence and prevalence of the disease in the specific country/geographic setting? What is the health burden (morbidity/mortality)? What are epidemiologic trends?
2. What are the proximal risk factors for this disease or health problem? What are the distal risk factors for this health problem? (e.g., culture, poverty, women's status, climate change)
3. Why is this disease a significant problem?
4. If one were to develop an intervention for this problem, what intervention would you choose and why?

D. Written Assignments #2

Select a communicable disease of public health significance. Pick one country in which this disease is a problem. For this disease and country, design and present an intervention in a 3-4 page paper (single space). Include references as necessary to justify your significance. Include in your paper the following

1. What is the underlying problem and why is it significant? What is the incidence and prevalence of the disease in the specific country/geographic setting? What is the health burden (morbidity/mortality)? What are epidemiologic trends?
2. What is your intervention? Explain how it will be carried out. What is your study design?
3. What is your study population? How will it be recruited/enrolled? What are your inclusion and exclusion criteria?
4. What is the primary outcome? What are the secondary outcomes? How will they be measured (e.g., data collection)? Aside from your intervention, what other measures (e.g., exposures, confounders, etc.) would you collect?
5. What do you see as the potential challenges in implementing this intervention, and how will you deal with them?
6. What partners will you need to accomplish this research?

V. Course Text and Readings

Hulley, Cummings, Browner, Grady, Newman (eds). Designing Clinical Research. Lippincott, Williams, Wilkins; 2013 (4th ed).

"Control of Communicable Diseases Manual", 20th Edition, edited by David L. Heymann. American Public Health Association, 2015.

Additional readings will be assigned by the course instructor and posted to the class web site.

VI. Course Outline/Weekly Schedule

Week 1: 9/7/17

Lectures: Strategies for Prevention/Control of Infectious Diseases: Eradication, Elimination, Control
Developing Research Protocols for Interventions in Infectious Disease

Discussion: Disease eradication successes: Smallpox, Guinea worm

Readings: Hulley et al. Chapter 1: Getting Started: The Anatomy and Physiology of Clinical Research

Fenner F. A successful eradication campaign. Global eradication of smallpox. *Rev Infect Dis* 1982;4(5):916-30

Hopkins DR, Ruiz-Tiben E, Weiss A, et al. Dracunculiasis eradication: and now, South Sudan. *Am J Trop Med Hyg.* 2013 Jul;89(1):5-10

Control of Communicable Diseases: "Smallpox", "Dracunculiasis"

Week 2: 9/14/17

Lectures: Measures of Morbidity and Mortality in Infectious Diseases
Background and Significance in Research Proposals

Discussion: Disease eradication failures: malaria, measles

Readings: Hulley et al. Chapter 2: Conceiving the Research Question and Developing the Study Plan

Najera JA, Gonzalez-Silva M, Alonso PL. Some lessons for the future from the Global Malaria Eradication Programme (1955-1969). *PLoS Med* 2011;8:e1000412.

Durrheim DN, Crowcroft NS, Strebel PM. Measles - The epidemiology of elimination. *Vaccine* 2014 Dec 5;32(51):6880-6883.

Control of Communicable Diseases: "Measles", "Malaria"

Week 3: 9/21/17

Lectures: Study Subjects: Sampling, Recruitment, Enrollment

Discussion: Interventions During Complex Humanitarian Emergencies

Readings: Hulley et al. Chapter 3: Choosing the Study Subjects: Specification, Sampling, and Recruitment

Farmer P, et al. Meeting cholera's challenge to Haiti and the world: a joint statement on cholera prevention and care. *PLoS Negl Trop Dis.* 2011;5(5):e1145.

Roberts L, Chartier Y, Chartier O, Malenga G, Toole M, Rodka H. Keeping clean water clean in a Malawi refugee camp: a randomized intervention trial. *Bull World Health Organ* 2001;79:280-87

Fewtrell L et al. Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: systematic review and meta-analysis. *Lancet Infect Dis* 2005;5:42-52

Control of Communicable Diseases: "Onchocerciasis", "Ascaris", "Hookworm"

WRITTEN ASSIGNMENT #1 DUE

Week 4: 9/28/17

Lectures: Study Designs: Clinical and Community Trials, Observational Cohort Studies

Discussion: Neglected tropical diseases

Readings: Hulley Chapter 10: Designing a Randomized Blinded Trial

Frieden TR. Evidence for health decision making - beyond randomized, controlled trials. *N Engl J Med* 2017;377(5):465-475

Lakwo T, et al. Interruption of the transmission of *Onchocerca volvulus* in the Kashoya-Kitomi focus, western Uganda by long-term ivermectin treatment and elimination of the vector *Simulium neavei* by larviciding. *Acta Trop*. 2016 Dec 26. (16)31141

Welch VA, et al. Mass deworming to improve developmental health and wellbeing of children in low-income and middle-income countries: a systematic review and network meta-analysis. *Lancet Glob Health* 2017;5(1):e40-e50.

Control of Communicable Diseases: "Onchocerciasis", "Ascaris", "Hookworm"

Week 5: 10/5/17

Lectures: Measurements, Survey Design

Discussion: Community support workers

Readings: Hulley Chapter 4: Planning the Measurements: Precision, Accuracy, and Validity

Hulley Chapter 15: Designing Questionnaires, Interviews, and Online Surveys

Jegade AS et al. Assessing acceptability of a diagnostic and malaria treatment package delivered by community health workers in malaria-endemic settings of Burkina Faso, Nigeria, and Uganda. *Clin Infect Dis*. 2016;63(suppl 5):S306-S311

Franke MF, Kaigamba F, Socci AR, et al. Improved retention associated with community-based accompaniment for antiretroviral therapy delivery in rural Rwanda. *Clin Infect Dis* 2013; 56: 1319-1326.

Chang LW, Kagaayi J, Nakigozi G, et al. Cost analyses of peer health worker and mHealth support interventions for improving AIDS care in Rakai, Uganda. *AIDS Care*. 2013;25(5):652-6

Control of Communicable Diseases: "Malaria", "HIV"

Week 6: 10/12/17

Lecture: Program evaluation, Operational Research

Discussion: Students will each briefly present their interventions (from Assignment # 2) in a 10-15 minute talk, followed by 5 minutes for questions and discussion.

Readings: Hulley Chapter 18: Community and International Studies

Royston G. Meeting global health challenges through operational research and management science. *Bulletin of the World Health Organization* 2011;89:683-688.

Zachariah R, Harries AD, Ishikawa N, et al. Operational research in low-income countries: what, why, and how? *Lancet Infect Dis* 2009; 9:711–17

Week 7: 10/18/17

Lecture: IRB, Human Subjects and infectious disease control measures

Discussion: Students will each briefly present their interventions (from Assignment # 2) in a 10-15 minute talk, followed by 5 minutes for questions and discussion.

Readings: Hulley Chater 14: Addressing Ethical Issues

Krosin MT, et al. Problems in comprehension of informed consent in rural and peri-urban Mali, West Africa. Clin Trials 2006;3:306-13.

London L. Ethical oversight of public health research: can rules and IRBs make a difference in developing countries? Am J Public Health. 2002;92(7):1079-84.

WRITTEN ASSIGNMENT #2 DUE

VII. Evaluation and Grading

Below is a list of the activities by which students will be graded and their assigned weights:

Activity	Percent of Grade
Written Assignment 1	25 points
Written Assignment 2 and Presentation	35 points
Class Participation	20 points
Class Preparation Worksheet	20 points

Class Participation: A sign-up sheet will be circulated each class, and counted as part of the student's overall grade in terms of participation. This reflects the core belief that coming to and participating in class is an essential part of the learning process. Class participation also reflects a student's active engagement in class discussions, and being prepared to participate in these discussions.

Class Preparation Worksheets: Prior to each class, students will be asked to fill out (in advance of the class discussion) a brief worksheet for each of the articles to be discussed. The worksheet should include: research question, study design, study setting, study subjects, primary intervention or exposure, and primary outcome.

Written Assignment 1 is due on 9/27/17, and **Written Assignment 2** (with a short in class presentation) is due on 10/18/17. As take-home exercises, each student should do their own work. Assignments are due in class on the due date indicated in the syllabus. Unless the student has received prior approval from the instructor, late papers will be penalized 2 points for each day overdue. Students should take time to make sure that their papers are well organized and written, and they have addressed each of the points in the assignment; written communication is important in public health.

Final grades will be assigned as follows:

Number of Points	Grade
100.0 - 92.5	A
89.9 - 92.4	A-
87.3 - 89.8	B+
82.4 - 87.2	B
80.0 - 82.3	B-
77.5 - 79.9	C+
72.4 - 77.4	C
70 - 72.3	C-
69 or below	F

Students may elect to take the class on a S/N basis, with satisfactory achievement equivalent to a grade of C or better. For additional information, please refer to:

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>.

Course Evaluation

The SPH will collect student course evaluations electronically using a software system called CourseEval: www.sph.umn.edu/courseeval. The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: www.sph.umn.edu/grades. All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

Incomplete Contracts

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: www.sph.umn.edu/grades.

University of Minnesota Uniform Grading and Transcript Policy - A link to the policy can be found at onestop.umn.edu.

VIII. Other Course Information and Policies

Grade Option Change (if applicable)

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at onestop.umn.edu.

Course Withdrawal

Students should refer to the Refund and Drop/Add Deadlines for the particular term at onestop.umn.edu for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw. Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at sph-ssc@umn.edu for further information.

Student Conduct Code

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see:
http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference:
<http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Scholastic Dishonesty

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see:
<http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see:
<http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

Appropriate Student Use of Class Notes and Course Materials

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Sexual Harassment

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy:

<http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy:

http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Services (DS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

The Office of Student Affairs at the University of Minnesota

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development–Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service. For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

Academic Freedom and Responsibility: for courses that do not involve students in research

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

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* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".