**PH510: Introduction to Public Heath**

**Spring 2012**

**Tuesday/Thursdays, 12:30PM-2PM**

*Classroom:*

24 Cummington Street Boston University Charles River Campus

Life Sciences & Engineering Building (LSE) B01

**Instructor:** Sophie Godley, MPH, Clinical Assistant Professor, Department of Community Health Sciences & Director of Undergraduate Education

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**Office Hours:** Thursdays, 2:30-4;30PM CAS (685 - 725 Commonwealth Avenue) Room B18A; Fridays, 1-3PM Medical Campus office, or by appointment.

**Teaching Assistants:**

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| --- | --- | --- | --- |
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**Your Primary Teaching Assistant:**

You will be assigned a primary teaching assistant during the first week of class. Please be sure to get to know your teaching assistant! If you email a teaching assistant, please include “PH510” in the subject line.

**Course Description:**

Over the last century life expectancy has improved remarkably in developed countries. It may surprise you to know that most of the improvement is attributed to public health interventions and medical care only had a secondary role. Nevertheless, we still have lots of problems – E. coli food poisoning outbreaks. Pandemic influenza. Epidemic obesity. Premature death from tobacco. HIV/AIDS. Health disparity. These problems eventually touch each of us. Perhaps the solutions seem obvious to you … but they are not. Public health problems are complex. The solutions are usually controversial. And the resources to solve these problems are limited. Ultimately, the solutions will require committed people with many different talents: scientists, mathematicians, educators, ethicists, politicians, communicators, psychologists, and more. This course introduces the multifaceted discipline of public health and will challenge you to grapple with current pressing problems in public health. An important theme of the course is that decisions regarding public health should be based on evidence (data) and they should consider the impact of proposed interventions on a variety of stakeholders. You will have opportunities to formulate your own solutions to a series of public health problems, and you will also have the opportunity to compare your proposals to those of both academics and an impressive array of experts from the field who struggle with these problems in the real world every day.

**Course Goals:**

By the end of the course, you will be able to:

1. Describe the goals, functions, and methods of public health.

2. Discuss the pros and cons and the utility and limitations of a variety of strategies for disease prevention and control and their potential application to specific health problems.

**Course Format:** The course is divided into two parts:

**Part 1: Core concepts and tools of public health**

The first half of the course will introduce the core concepts and tools used in public health research and practice.

**Part 2: Controversies in Public Health: Five Current Problems**

It is impossible to cover every aspect of public health in one semester. Instead, five current problems have been selected to an opportunity for you to apply the concepts and methodologies discussed in part one of the course. None of these problems have a simple solution. They are all controversial, and we have selected them, in part, to stimulate your active involvement through carefully selected supplementary readings that illustrate different points of view, outside research, and active discussion. The supplementary readings for each module will provide information and guidance that will help you work through a series of structured assignments for each problem. These graded “written assignments” (see below) will provide important information that will enable you to actively participate in occasional classroom summary discussions. For some discussions we will have invited outside experts present, but the primary focus of each summary discussion will be *student-led* discussion, so come prepared. Given the controversial nature of these problems, we hope that these classroom discussions will be lively and informative.

**The five modules will focus on the following problems:**

1. Food and waterborne diseases: how can we ensure food safety in the United States? What can we learn from recent national episodes of food-borne disease?
2. Respiratory health: second-hand tobacco smoke, air pollution and climate change
3. Influenza vaccination: should you get it?
4. HIV/AIDS and Health Disparity: what explains the disparity in HIV/AIDS in the US?
5. Obesity and behavior change: What can be done to reverse the current trend? What’s the role of government in preventing obesity?

**Modules include:**

* Lectures to introduce the topic and provide a framework to understand the unique aspects of each topic that must be considered when trying to develop intervention strategies.
* Required readings in the textbook and supplementary readings.
* Structured questions based on the readings and lectures (Written Assignments).
* Occasional class discussions and/or activities.

**Lectures:** Lectures will be given by the course instructor and several invited experts and are designed to coordinate with the readings without duplicating them. Many of the lecturers use PowerPoint; these files will be posted on Blackboard as they become available.

**Written Assignments & Class Discussions:** Written assignments will consist of a series of questions based on lectures, assigned readings, and your independent research. The written assignments will be posted on Blackboard under “Assignments.” Responses are due at the beginning of class on the due date, unless arrangements are made in advance. Please submit your written assignments as typed, double-spaced, stapled hard copies using 12-point font. Responses that directly, clearly, and concisely address the questions will receive the highest grades. The grading rubric for these assignments is shown below.

**Grading Criteria for Assignments:** Each of the ten criteria below will be scored from 0-10, and the student’s score for each discussion will be the sum of the scores for these ten criteria (see details below). These criteria were chosen to emphasize your communication skills and the skills you are acquiring in PH510.

|  |  |
| --- | --- |
| 1. Were responses **grammatically correct and free of spelling errors**?
 |  |
| 1. Readability, Logic and Flow: Regardless of whether you (the grader) agree with the student’s comments and conclusions, were their thoughts **expressed logically**? Did the response “flow” in an orderly way? Were the student’s comments **clear and concise**?
 |  |
| 1. Were the students observations **factually correct**?
 |  |
| 1. Did the student **incorporate terminology** from PH510 and use these terms correctly?
 |  |
| 1. Does the discussion **convey a fundamental understanding of the concepts** addressed in this course?
 |  |
| 1. Did the student appropriately **incorporate** information from lectures, the text book, or assigned readings?
 |  |
| 1. Did the student **take a clear position** on controversial points and provide a **rationale and defense** of this position?
 |  |
| 1. Did the student identify **alternative interests or points of view** and acknowledge them appropriately?
 |  |
| 1. Were solutions proposed by the student reasonably **feasible**?
 |  |
| 1. Were responses **thoughtful and** **serious**, or were they overly brief, incomplete, or dismissive?
 |  |
| **TOTAL** |  |

**Scale for Each Criterion**

10= Outstanding, among the best.

 9= Excellent, but minor improvements would have improved it.

 8= Good. Meets the criterion, with no major deficiencies but there is room for improvement

 7= Satisfactory. Fundamental requirements are met, but there is definite room for improvement.

6= Performance is marginal for this criterion. There are major problems or omissions.

5= It is clearly deficient for this criterion. Substantial improvement is needed.

1-3= Varying degrees of abysmal.

0= Unanswered, or so utterly bad that it would have been better to not answer.

**NOTE:** It is standard academic practice to provide appropriate citations when you cite work by others. This doesn't have to be elaborate, but you should include appropriate references at the end of your written assignments.

**Class Discussions & Activities:**Periodically we will have class discussions or group activities during class. The purpose is to solidify concepts from class and readings and to allow you to develop and defend solutions to real-world public health problems. Students will be expected to actively participate in all class discussions and activities so come prepared.

**Required Readings:** The required reading for each session comes from the course textbook and from primary and secondary journal articles; these readings and hyperlinks to the articles are almost all listed in the detailed schedule of classes, learning objectives, and reading assignments listed after the summary table of the course schedule. Additional readings, and sometimes links to video, will be posted on Blackboard. The **course text book** is: Schneider, Mary Jane. (2011). Introduction to Public Health, 3rd edition. Gaithersburg, MD: Jones and Bartlett Publishers, Inc.

**Blackboard site:** The Blackboard site for PH 510 Spring 2012 can be found here: <http://blackboard.bu.edu/webapps/portal/frameset.jsp?tab_id=_2_1&url=%2fwebapps%2fblackboard%2fexecute%2flauncher%3ftype%3dCourse%26id%3d_43226_1%26url%3d>

**Mid-Term and Final Exams:** These will be closed-book exams based on information presented in class or in the assigned readings. The exams will consist of short answer and short essay questions along with some multiple-choice and true/false. The final exam will be cumulative, but will emphasize topics covered after the midterm. **How to study for the exams:** One can sometimes prepare successfully for a multiple choice exam by reviewing the material over and over, since this facilitates enough recognition that the student can select the correct answer from the list of choices. However, short answer and short essay questions require a different type of studying that goes beyond simple recognition. The best way to study for this type of exam is to put your books and notes aside and go through the learning objectives and the key terms used in the course and write down everything you can recall about each learning objective and term. Then check your answers against the book and notes and slides. If your answers are incomplete or incorrect, you need to focus on that particular objective.

**Grading:** Your semester grade will be computed based on the following:

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| **Component** | **% of Semester Grade** |
| Written Assignment #1  | 5%  |
| Written Assignments #2 | 10% |
| Written Assignments #3 | 5% |
| Written Assignments #4 | 5% |
| Written Assignment #5 | 10% |
| Written Assignment #6 | 5% |
| Midterm exam | 30% |
| Final exam | 30% |

Your semester average will be rounded off to the nearest tenth of a percent, and semester grades generally are assigned as shown to the right. |

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| --- | --- |
| **%** | **Grade** |
| 94.0 - 100% |  A |
| 90.0 - 93.9% |  A- |
| 88.0 - 89.9% |  B+ |
| 82.0 - 87.9% |  B |
| 80.0 - 81.9% |  B- |
| 78.0 - 79.9% |  C+ |
| 72.0 - 77.9% |  C |
| 70.0 - 71.9% |  C- |
| 60.0 - 69.9% |  D |
| <60% |  F |

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**Absences and Extensions**

**Absences**

Students are expected to attend class. However, I recognize that emergencies arise that require students be absent. If you cannot attend class, please send an email to me prior to class. Please put “absent” in the subject line. You are expected to catch up on material covered in class through *Blackboard* notes and other students’ notes.

**Requests for Extensions on Written Assignments**Written assignments are due on dates posted unless prior arrangement has been made with the instructor 48 hours prior to the due date. Assignments that are not received on the expected due date will be lowered by one point per day (e.g. from 95 to 94 if turned in one day late). If due to circumstances beyond your control you need to request an extension you need to email me 48 hours prior to the due date. Please put “extension request” in the subject line. Remember, public health is a highly respected profession. Part of our goal at BUSPH is to teach students skills and habits for the professional world. Meeting deadlines and managing multiple responsibilities is part of the learning process.

**PH510 Spring 2011 Course Schedule**

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| --- | --- | --- | --- | --- |
| **Class** | **Date** | **Topic** | **Instructor** | **Assignments due** |
| **Section 1: Core Concepts and Tools of Public Health** |
| 1 | Jan 17 Tues | The Evolution of Public Health | Godley |  |
| 2 | Jan 19Thurs | Public Health Surveillance | Godley |  |
| 3 | Jan 24Tues | Descriptive Epidemiology: Investigation of an Acute Outbreak | W. LaMorte |  |
| 4 | Jan 26Thurs | Analytical Epidemiology | W. LaMorte |  |
| 5 | Jan 31Tues | Pitfalls in Identifying Determinants of Disease | Godley |  |
| 6 | Feb 2Thurs | Options for Interventions | Godley |  |
| 7 | Feb 7Tues | Evaluating Public Health Programs | Godley |  |
| 8 | Feb 9Thurs | The Role of the State in Public Health | Godley | **Assignment One (EPI)** |
| **Section Two****Controversies in Public Health: Five modules** |
| **Module 1: Food borne disease** |
| 9 | Feb 14Tues | Food borne Diseases | Godley |  |
| 10 | Feb 16Thurs | Food Safety: the 2006 & 2007 E. Coli Outbreaks | Godley |  |
|  | Feb 21Tues | NO CLASS: Monday schedule |  |  |
| 11 | Feb 23Thurs | Review for Mid-term | Godley | **Assignment Two (Food safety)** |
| 12 | Feb 28Tues | **MID TERM EXAM** | Godley | **MID TERM** |
| 13 | March 1Thurs | Ensuring Food Safety in the US | J. Feeney |  |
|    **Module 2: respiratory health** |
| 14 | March 6Tues |  Environmental Tobacco Smoke  | M. Siegel |  |
| 15 | March 8Thurs | Public Health Practice & Policy | H. Cox |  |
|  | March 12-16 |  No Class: Spring Break |  |  |
| 16 | March 20Tues |  Tobacco & Public Health, ETS Studies  | Godley |  |
| 17 | March 22Thurs | Air Pollution and Public Health | M. Scammell | **Assignment Three (ETS)** |
| **Module 3: Influenza vaccine** |
| 18 | March 27Tues | The Biology of Influenza | W. LaMorte |  |
| 19 | March 29 Thurs | Safety and Effectiveness of Vaccination | K. Shea |  |
| 20 | April 3Tues | Understanding public resistance to vaccines | Godley | **Assignment Four (Vaccine)**  |
| **Module 4: HIV/AIDS and Health Disparity in the US** |
| 21 | April 5Thurs | HIV/AIDS | Godley |  |
| 22 | April 10Tues | Health Disparity | Godley |  |
| 23 | April 12Thurs | Changing Individual Behaviors | Godley |  |
| 24 | April 17Tues | Policy and HIV/AIDS | Godley | **Assignment Five (HIV)** |
| **Module 5: Over and Under Nutrition** |
| 25 | April 19Thurs | Under- and Over-nutrition | Godley |  |
| 26 | April 24Tues | The Built Environment | Godley |  |
| 27 | April 26Thurs | The Obesity Epidemic | Godley |  |
| 28 | May 1Tues | Review for final, Last Class | Godley | **Assignment Six (Built Environment)** |
|  | **TBA** | **FINAL EXAM** | **Godley** | **ROOM TBA** |

**Learning Objectives and detailed reading guidance**

**Class 1: January 17, 2012**

 **The Evolution of Public Health – (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Discuss the impact of the agricultural revolution and the industrial revolution on the health of Europe and the United States in the 18th and 19th centuries.
* Discuss the origins of the modern system of surveillance for disease. State what the “Bills or Mortality” were, why the practice of “numbering the people” began, and the importance of this to the evolution of public health.
* State the major contribution made by the following individuals:
	+ Dr. William Farr
	+ Villerme
	+ Jeremy Bentham
	+ Edwin Chadwick
	+ Lemuel Shattuck
* State the four key conclusions reached by Rene Dubos(1959) in his book “Mirage of Health”
* List the 5 steps of the public health approach
* Distinguish between social justice and market justice
* Discuss and give examples of how the following factors sometimes create controversy with respect to public health programs and initiatives: Economic interests, Individual liberty, Moral and religious opposition, Politics.

*Readings:*

1. Schneider, Prologue, Chapters 1 & 2
2. Hans Rosling: New Insights on Poverty. Watch: <http://www.ted.com/index.php/talks/view/id/140>

**Class 2:January 19, 2012**

**Public Health Surveillance (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe the disease reporting pathway for Massachusetts and the US federal government.
* Explain what is meant by the term “notifiable disease” (or “reportable disease”)
* Describe the breadth of modern public health surveillance systems and give specific examples.
* Discuss how surveillance data can be used
* Define “*syndromic surveillance*” and explain how syndromic surveillance can be advantageous over regular surveillance.
* Differentiate between the roles and responsibilities of local, state, and federal governments with respect to public health activities.

*Readings:*

1. Schneider, Chapters 3 & 4
2. UNC Focus on Field Epidemiology: Public health surveillance systems. <http://nccphp.sph.unc.edu/focus/vol5/issue6/5-6SurveillanceSystems_issue.pdf>
3. Trifonov V, Khiabanian H, Rabadan R: Geographic Dependence, Surveillance, and Origins of the 2009 Influenza A (H1N1) Virus. ***Perspective article in:*** N. Engl. J. Med. 2009;361(2):115-119. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/361/2/115.pdf>

**Class 3: January 24, 2012**

**Measures of Disease Frequency, Descriptive Epidemiology, & Investigation of Acute Disease Outbreaks**

**Professor Wayne LaMorte, Epidemiology BUSPH**

*After successfully completing this section, students in PH510 will be able to:*

* Define and calculate *prevalence* and explain the use of prevalence in public health.
* Define and calculate *cumulative incidence* and convert it into a form that enables you to compare the incidence in two or more groups.
* Explain how the characteristics of person, place, & time are used to formulate hypotheses in acute disease outbreaks and in studies of chronic diseases.
* Describe what an epidemic curve is and how it may provide useful information about the source of an outbreak.
* Define the following: epidemic, endemic, pandemic, outbreak.
* Describe the basic steps in an outbreak investigation.

 *Readings:*

* 1. Schneider, Chapter 5
	2. <http://sph.bu.edu/otlt/lamorte/EP713/Web_Pages/EP713_DescriptiveEpi/>

**Class 4: January 26, 2012
 Analytical Epidemiology & Measures of Association (LaMorte)***After successfully completing this section, students in PH510 will be able to:*

* Define epidemiology and distinguish between descriptive and analytical epidemiology
* Construct a 2x2 table for summarizing epidemiologic data, and to use that table to calculate and interpret a risk ratio or odds ratio.
* Define, calculate and interpret risk *ratios* and *odds ratios*.

Define and distinguish between randomized controlled trials, cohort studies and case-control studies

*Readings:*

1. <http://sph.bu.edu/otlt/lamorte/EP713/Web_Pages/EP713_AnalyticOverview/>
2. <http://sph.bu.edu/otlt/lamorte/EP713/Web_Pages/EP713_Association/>
3. Schneider, Chapter 5.

**Class 5: January 31, 2012**

**Pitfalls in Identifying the Determinants of Disease (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Distinguish between random and systematic error; and between precision and accuracy.
* Define the following terms and explain how they can influence the validity of epidemiological studies:
	+ Chance (Sampling Error)
	+ Bias (Systematic Errors): selection bias, information bias
	+ Confounding
* List factors that strengthen our confidence in whether there is a true cause and effect relationship between exposure & disease (Hill’s Criteria).

*Readings:*

1. **Notes on Bias** (posted on Blackboard in Course Documents in Required Readings folder).
2. Schneider, Chapters 6 & 7

**Class 6: February 2, 2012**

**Options for Intervention (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe the importance of developing a theory of a health problem (‘web of causation’) prior to selecting an intervention.
* Discuss the major psychological models of health behavior:
	+ Health belief model
	+ Locus of control theory
	+ Ecological model
* Identify and describe the five levels of influence on health behaviors included the in the *social-ecological model*.
* Identify which of the above intervention strategies are being used for specific health interventions.
* Discuss the importance of the social and physical environment on health behaviors and the likelihood of changing behaviors.
* Explain what is meant by the 5-tier pyramid of public health interventions

*Readings:*

1. Schneider, Chapters 13 &14
2. Frieden, T. (2010). A Framework for Public Health Action: The Health Impact Pyramid. *American Journal of Public Health,* *100*(4), 590-<http://proquest.umi.com.ezproxy.bu.edu/pqdweb?index=0&did=1990719121&SrchMode=1&sid=1&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1294798879&clientId=3740>

**Class 7: February 7, 2012**

**Evaluating Public Health Programs (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Define what is meant by a *program evaluation* and list the basic questions that it should answer.
* Explain what is meant by a research design for program evaluation and what its primary purpose is.

*Readings:*

1. Smith RD, & M Petticrew: Public health evaluation in the twenty-first century: time to see the wood as well as the trees? *J Public Health* (2010) 32(1): 2-7. [http://jpubhealth.oxfordjournals.org/content/32/1/2.full.pdf+html](http://jpubhealth.oxfordjournals.org/content/32/1/2.full.pdf%2Bhtml)

**Class 8: February 9, 2012**

***FIRST WRITTEN ASSIGNMENT DUE!***

**The Role of the State in Public Health (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Identify the source of state power to enact laws, including public health laws
* Give an example of a public health law
* Discuss the scope of state power to regulate public health matters
* Describe the role of the U.S. Supreme Court in reviewing public health laws
* Give an example of a principle of constitutional law applied in *Jacobson v. Massachusetts*
* Have a basic understanding of the concepts of *legal precedent, standards of review* and *individual liberty* as protected by the 14th Amendment to the U.S. Constitution

*Readings:*

1. Schneider, Chapter 3
2. US Constitution; <http://www.usconstitution.net/const.pdf>
3. **Jacobson v. Massachusetts with Introduction from Dr. Roche**. (Posted on Blackboard in Course Documents in Required Reading folder).

**Section Two: Controversies in Public Health: Five Modules**

**Module 1: Foodborne Disease**

**Class 9: February 14, 2012**

**The Threat of Food-borne Disease (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Identify the U.S. agencies responsible for protection of the food supply, and discuss problems or difficulties with this method of protection.
* Identify stages in food manufacturing and delivery where hazards can be introduced.

*Readings:*

1. Schneider, Chapter 23
2. Something's Rotten in Food Oversight. Washington Post, 2006: <http://www.washingtonpost.com/wp-dyn/content/article/2006/09/22/AR2006092201397.html>
3. Presidents Food Safety Working Group: <http://www.foodsafetyworkinggroup.gov/>
	1. Food safety working group – key findings. <http://www.foodsafetyworkinggroup.gov/FSWG_Key_Findings.pdf>
	2. Food safety working group – fact sheet. <http://www.foodsafetyworkinggroup.gov/FSWG_Fact_Sheet.pdf>

**Class 10: February 16, 2012**

Food Safety: the 2006 & 2007 E. Coli Outbreaks (Godley)

*After successfully completing this section, students in PH510 will be able to:*

* Describe the burden of food-borne illness in the US.
* Differentiate between a food contaminant and a food additive.
* Define the three different kinds of food hazards: biologic, chemical, and physical.
* Differentiate between food-borne infections and food-borne intoxications.
* List at least 7 times/places where food contamination can occur between farm and table, and identify one intervention strategy for each potential contamination point.
* Explain why HACCP is not more widely used.
* Describe the 2006/2007 E. Coli epidemic including: how did we know this was an epidemic, why did it occur, how big was it, who was affected, what was the result.

*Readings:*

1. Schneider, Chapter 23
2. Maki DG. Don't eat the spinach - controlling foodborne infectious disease. N Engl J Med. 2006 Nov 9; 355(19): 1952-5
<http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/355/19/1952.pdf>
3. Audio interview with Dr. Maki on New England Journal of Medicine website:
<http://content.nejm.org.ezproxy.bu.edu/cgi/content/full/355/19/1952/DC1>
4. Mark Bittman: What's wrong with what we eat? (Podcast on www.ted.com).
<http://www.ted.com/index.php/talks/mark_bittman_on_what_s_wrong_with_what_we_eat.html>

**February 21, 2012: NO CLASS – Follow Monday Class Schedule**

**Class 11: February 23, 2012**

**SECOND WRITTEN ASSIGNMENT DUE!**

**Review for the Midterm (Godley)**

**Class 12: February 28, 2012**

**Midterm**

**Class 13: March 1, 2011**

**Ensuring Food Safety in the US**

**Discussion with Jim Feeney, MPH Town of Arlington, MA Health Department**

<http://www.town.arlington.ma.us/Public_Documents/ArlingtonMA_HServe/index>

*After successfully completing this section, students in PH510 will be able to:*

* Describe local and national solutions to the burden of food-borne illness in the US.
* Differentiate between the role of local and national governments in regulating and enforcing food safety.

*Readings:*

1. CDC Fact Sheets on reducing Salmonella risk in eggs

<http://cdc.gov/Features/SalmonellaEggs/>

1. Food Safety.gov tips

<http://www.foodsafety.gov/keep/types/eggs/index.html>

1. CDC Investigation

<http://www.cdc.gov/salmonella/enteritidis/>

1. E.Coli outbreak in sprouts in Germany

<http://www.euro.who.int/en/what-we-do/health-topics/disease-prevention/food-safety/outbreaks-of-e.-coli-o104h4-infection>

**Module 2: Respiratory Health**

**Class 14: March 6, 2012**

**Environmental Tobacco Smoke**

**Professor Michael Siegel Community Health Sciences, BUSPH**

*After successfully completing this section, students in PH510 will be able to:*

* Discuss the importance of evaluating primary evidence when evaluating conclusions.
* Give examples of how zeal for health promotion can result in stigmatization of personal behaviors. Be able to give examples.
* Explain why it is important to be skeptical and scrutinize conclusions about health.
* Discuss the importance of considering the various interests of the many potential stakeholders who might be affected by health promotion programs, laws and policies.

*Readings:*

1. Schneider, chapter 15
2. Siegel M: Is the tobacco control movement misrepresenting the acute cardiovascular health effects of secondhand smoke exposure? An analysis of the scientific evidence and commentary on the implications for tobacco control and public health practice. *Epidemiologic Perspectives & Innovations* 2007, 4:12. <http://www.epi-perspectives.com/content/pdf/1742-5573-4-12.pdf>
3. Enstrom JE and Kabat GC: Environmental tobacco smoke and tobacco related mortality in a prospective study of Californians, 1960-98. British Medical Journal 2003;326:1057-1066. <http://www.bmj.com.ezproxy.bu.edu/cgi/content/full/326/7398/1057> .
4. Published Study Finds No Effects of Smoking Ban on Heart Attacks in Tuscany, Italy in First Year After Ban. <http://tobaccoanalysis.blogspot.com/2010/01/published-study-finds-no-effect-of.html>
5. Hartocollis A: Suing the smoker next door. New York Times. Feb. 8, 2009. <http://www.nytimes.com/2008/02/09/nyregion/09ansonia.html>
6. Hartocollis A: Ansonia smoking lawsuit settled. New York Times City Room: <http://cityroom.blogs.nytimes.com/2008/04/07/ansonia-smoking-lawsuit-is-settled/?pagemode=print>

**Class 15: March 8, 2012**

**Public Health Practice & Policy**

**Associate Dean for Practice, BUSPH Harold Cox**

*After successfully completing this section, students in PH510 will be able to:*

*After successfully completing this section, students in PH510 will be able to:*

* Explain the roles of local, state, and national public health authorities.
* Differentiate between local, state, and national public health authority.
* Describe the different professional opportunities for students in the field of public health.
* Briefly define “public health practice.”

*Readings:*

In preparation for class, please review the following websites:

* [www.cdc.gov](http://www.cdc.gov) [www.bphc.org](http://www.bphc.org) [www.ma.gov/dph](http://www.ma.gov/dph)
* [www.apha.org](http://www.apha.org)

**SPRING BREAK: March 12-16**

**Class 16: March 20, 2012**

**Tobacco & Public Health, and ETS Studies (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Discuss the forces that promoted the use of tobacco in the US from 1800 to present, and give examples of techniques and strategies used by the tobacco industry to promote smoking.
* Discuss the techniques used by the anti-tobacco movement from 1960 to present and give specific examples of interventions. Be able to identify where these strategies lie in the context of the social-ecological model.
* Evaluate studies on environmental tobacco smoke.
* Discuss the relevance of confidence intervals and P-values in interpreting studies.
* Discern and critique appropriate study sample size.

*Readings:*

1. Schneider, Chapters 6 & 7
2. American Non-smokers Rights Foundation. Responding to the Enstrom and Kabat study on secondhand smoke. <http://no-smoke.org/pdf/enstrom_kabat.pdf>
3. Mills NL et al: Ischemic and thrombotic effects of dilute diesel-exhaust inhalation in men with coronary heart disease. N. Engl. J. Med. 2007;357:1075-82. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/357/11/1075.pdf>
4. Gilliland FD, Berhane K, et al,: Environmental Tobacco Smoke and Absenteeism Related to Respiratory Illness in Schoolchildren. Am. J. Epidemiology 2003;157(10):861-869. <http://ezproxy.bu.edu/login?url=http://aje.oxfordjournals.org/cgi/reprint/157/10/861> .

**Class 17: March 22, 2012**

***THIRD ASSIGNMENT DUE!***

**Air Pollution and Public Health**

**Madeleine Scammel, PhD; Assistant Professor of Environmental Health, BUSPH**

*After successfully completing this section, students in PH510 will be able to:*

* Explain the meaning of “criteria air pollutants” and be able to list its primary health impact and at least one source.
* Briefly define the atmospheric condition known as a temperature inversion, and explain why it can be important in environmental health.
* Describe the effect of phasing out leaded gasoline on blood lead levels of US children.
* Explain the relationship between particulate size and the fate of inhaled particulates in the body.
* Describe and state the basic function of the bronchi and the alveoli.
* Describe cilia and the part they play in the mucociliary escalator.
* Explain whether carbon dioxide is regulated as an air pollutant in the United States.

*Readings:*

1. Schneider, Chapters 19 & 20
2. Samet JS, Dominici F, et al.: Fine particulate air pollution and mortality in 20 US Cities, 1987-1994. N. Engl. J. Med. 2000;343:1742-9. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/343/24/1742.pdf>
3. Pope CA III: Air pollution and health — good news and bad. ***Editorial in:*** N. Engl. J. Med. 2004;351(11):1132-1134. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/351/11/1132.pdf>
4. Krewski D: Evaluating the effects of ambient air pollution on life expectancy. ***Editorial in:*** N. Engl. J. Med. 2009;360(4):413-415. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/360/4/413.pdf>

**Module 3: Influenza**

**Class 18: March 27, 2012**

The Biology of Influenza (LaMorte)

*After successfully completing this section, students in PH510 will be able to:*

* Describe the process by which influenza viruses evolve, including the role of the interaction among humans, birds and pigs.
* Explain how “genetic drift” and “genetic shift” result in continual changes in the influenza genomes.
* Describe the process by which influenza viruses are transmitted and how they infect humans.
* Discuss the utility of non-pharmacologic means of controlling the spread of influenza viruses.
* Explain why new flu vaccines must be produced each year.
* Outline the global surveillance system for influenza viruses.
* Describe the role of quarantine in controlling disease transmission.

*Readings:*

1. Zimmer SM, Burke DS: [Historical Perspective — Emergence of influenza A (H1N1) viruses](http://search.nejm.org/search?p=R&srid=S9%2d6&lbc=nejm&w=H1N1&url=http%3a%2f%2fcontent%2enejm%2eorg%2fcgi%2fcontent%2fshort%2f361%2f3%2f279&rk=13&uid=382645199&sid=2&ts=subs&rsc=EihmQbbGGucwUEyJ&method=and&isort=score&start%5fyear=2000&start%5fmonth=1). ***Review Article — Current Concepts in:***N Engl J Med 2009;361:279-85. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/361/3/279.pdf>

**Class 19: March 29, 2012**

**Vaccine Safety and Efficacy**

Kim Shea, MPH; Boston University School of Public Health

*After successfully completing this section, students in PH510 will be able to:*

* Describe the impact that routine childhood vaccination has had on infectious diseases over the last century.
* Describe how vaccination produces immunity against infection, and differentiate between active and passive immunity.
* Define vaccine efficacy, and explain how indirect effects play a role in how effective a vaccine is.
* List the reasons why vaccines are held to a higher safety standard than other medical interventions.
* List the challenges to assessing vaccine safety and explain why post-licensure vaccine safety studies are needed.
* Define VAERS and explain its utility in monitoring vaccine safety.

*Readings:*

1. Schneider, pages 160-162
2. Wright PF: Vaccine preparedness — are we ready for the next influenza pandemic? ***Perspective article in:*** N. Engl. J. Med. 2008;358(24):2540-43. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/358/24/2540.pdf>
3. Neuzil KM: [Pandemic Influenza Vaccine Policy — Considering the Early Evidence](http://search.nejm.org/search?p=R&srid=S9%2d2&lbc=nejm&w=H1N1&url=http%3a%2f%2fcontent%2enejm%2eorg%2fcgi%2fcontent%2fshort%2f361%2f25%2fe59&rk=39&uid=382645199&sid=2&ts=subs&rsc=pxHVsYpqegQjBe0l&method=and&isort=score&start%5fyear=2000&start%5fmonth=1). ***Editorial in:*** N. Engl. J. Med. 2009;361:e59 (1-3). <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/361/25/e59.pdf>
4. Ofri D: The emotional epidemiology of H1N1 influenza vaccination. ***Perspective article in:*** N. Engl. J. Med. 2009;361(27):2594-2595. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/361/27/2594.pdf>
5. Zhu F-C et al.: A novel influenza A (N1N1) vaccine in various age groups. N. Engl. J. Med. 2009;361(25):2414-23. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/361/25/2414.pdf>

**Class 20: April 3, 2012**

***WRITTEN ASSIGNMENT FOUR DUE!***

 **Understanding public resistance to vaccines (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe how public resistance to vaccines has impacted child health across the US and in Europe.
* Articulate the fraudulent methodology used by Wakefield.
* Outline the charges brought against Wakefield and others for fraudulent research and its impact on the public’s health.

*Readings:*

1. Read or listen: Measles Resurgence Tied To Parents' Vaccine Fears by Richard Knox, April 5, 2010. NPR news. <http://www.npr.org/templates/story/story.php?storyId=125570056>

2. Deer, Brian. How the case against the MMR vaccine was fixed. BMJ 2011; 342:c5347. <http://www.bmj.com/content/342/bmj.c5347>

3. Deer, Brian. How the vaccine crisis was meant to make money. BMJ 2011; 342:c5258. <http://www.bmj.com/content/342/bmj.c5258.full>

**Module 4: HIV/AIDS and Health Disparity in the US**

**Class 21: April 5, 2012**

**HIV/AIDS (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe the burden of disease due to HIV/AIDS in the US.
* Explain HIV viral load and how it affects prevention
* Describe intervention strategies to reduce the burden of disease – successes, failures, pros, cons.
* Explain how mobilization of resources for HIV prevention will impact epidemiology of the disease in the future.

*Readings:*

* 1. National AIDS Strategy: <http://www.aids.gov/federal-resources/policies/national-hiv-aids-strategy/nhas.pdf>
	2. Watch: Dr. Elizabeth Pisani, TED Lecture: <http://www.wisdomofwhores.com/elizabeth-pisani/ted-talk/>

**Class 22: April 10, 2012**

 **Health Disparity in the US (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Explain the causes and impact of health disparity in the US.
* Describe methods currently used in public health to reduce uneven burden of disease.
* Explain how mobilization of resources for HIV prevention will impact epidemiology of the disease in the future.

*Readings:*

1. Wise, PH. The Anatomy of A Disparity in Infant Mortality. Annual Review of Public Health. (2009)24:341-62. <http://arjournals.annualreviews.org.ezproxy.bu.edu/doi/pdf/10.1146/annurev.publhealth.24.100901.140816>

**Class 23: April 12, 2012**

**Changing Individual Behaviors (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe the three major theories or models describing how personal behaviors change.
* Discuss in detail the Stage of Change Theory of Prochaska and DiClemente.
* List and describe the five key elements of motivational interviewing.

*Readings:*

1. Schneider, Chapter 14.
2. See link to additional handout on Blackboard.

**Class 24: April 17, 2012**

***WRITTEN ASSIGNMENT FIVE DUE!***

**Policy & HIV/AIDS (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe the politics of prevention and their impact on HIV/AIDS in the US.
* Explain harm reduction and needle exchange efficacy.
* Discuss in detail the implications of abstinence-only education on sexuality education policy.

*Readings:*

* 1. Schneider, Chapter 10 & 18.
	2. Abraham, Laurie. “Teaching Good Sex” New York Times, November 20, 2011.
* Top of Form
* Bottom of Form

<http://www.nytimes.com/2011/11/20/magazine/teaching-good-sex.html?pagewanted=all>

**Module 5: – Over and Under Nutrition**

**Class 25: April 19, 2012**

**Under and Over Nutrition (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe the physiological effects of starvation.
* Explain the difference between marasmus and kwashiorkor.
* Explain the differences between type I and type II diabetes
* Explain the relationship between activity (exercise) and obesity.
* List 5 serious adverse health effects of obesity.
* Discuss how the balance between calorie intake versus calorie expenditure and their relationship to healthy weight versus obesity.

*Readings:*

1. Schneider, Chapter 16
2. Katharine Kranz Lewis and Michael Doonan: Overweight and obesity in Massachusetts: Epidemic, hype or policy opportunity? Policy brief. The Massachusetts Health Policy Forum. <http://masshealthpolicyforum.brandeis.edu/publications/pdfs/30-Jan07/Obesity%20Forum%20Policy%20Brief%20March%202007.pdf>
3. Read the ***Abstract and Introduction*** of Hu FB, Manson JE, et al.: [Diet, lifestyle, and the risk of type 2 diabetes mellitus in women](http://search.nejm.org/search?p=R&srid=S9%2d6&lbc=nejm&w=exercise%20diabetes&url=http%3a%2f%2fcontent%2enejm%2eorg%2fcgi%2fcontent%2fshort%2f345%2f11%2f790&rk=5&uid=382645199&sid=2&ts=subs&rsc=Rt3tEwCGirZql8P1&method=and&isort=score&start%5fyear=2000&start%5fmonth=1). N. Engl. J. Med. 2001;345:790-797, <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/345/11/790.pdf> .
4. Read the ***Abstract and Introduction*** of Tuomilehto J, et al.: [Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance](http://search.nejm.org/search?p=R&srid=S9%2d6&lbc=nejm&w=exercise%20diabetes&url=http%3a%2f%2fcontent%2enejm%2eorg%2fcgi%2fcontent%2fshort%2f344%2f18%2f1343&rk=7&uid=382645199&sid=2&ts=subs&rsc=HiWHtz4gUxsmE:fH&method=and&isort=score&start%5fyear=2000&start%5fmonth=1). N. Engl. J. Med. 2001;344:1343-50. <http://content.nejm.org/cgi/reprint/344/18/1343.pdf>

**Class 26: April 24, 2012**

**The Influence of the Built Environment on Health (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe some of the underlying causes of health disparities.
* Discuss the relationship that built space and the environment have on health.
* Identify policy and environmental strategies to promote healthy behavior.

*Readings:*

1. Schneider Chapter 16
2. Jackson RJ, Kochtitzky C: Creating a healthy environment: The Impact of the built environment on public health. US Centers for Disease Control and Prevention. <http://www.cdc.gov/healthyplaces/articles/Creating%20A%20Healthy%20Environment.pdf>
3. Sarah Goodell and Claudia H. Williams: The built environment and physical activity: What is the relationship? Robert Wood Johnson Foundation Policy Brief #11, April 2007. <http://rwjf.org/pr/synthesis/reports_and_briefs/pdf/no11_policybrief.pdf>
4. Mixed use development prototype. <http://dot.ci.tucson.az.us/projects/stone/pdfs/mixeduse.pdf>

**Class 27: April 26, 2012**

**The Obesity Epidemic (Godley)**

*After successfully completing this section, students in PH510 will be able to:*

* Describe some of the underlying causes of the obesity epidemic and its impact on children.
* Discuss the opportunities for influencing the obesity epidemic and community health.
* Identify policy and environmental strategies to promote healthy behavior.

*Readings:*

1.Schneider Chapter 16

2.Marion Nestle: Food marketing and childhood obesity — A matter of policy. ***Perspective article*** in N. Engl. J. Med. 2006;354(24):2527-29. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/354/24/2527.pdf>

3. Brief interview with Dr. Nestle **Podcast** from N. Engl. J. Med. <http://content.nejm.org.ezproxy.bu.edu/cgi/content/full/354/24/2527/DC1>

**Class 28: May 1, 2012**

***WRITTEN ASSIGNMENT SIX DUE!***

**Review for Final, last class (Godley)**

**Final Exam: date, time, & room TBA.**

**BUSPH Policy on Academic Honesty**

Academic misconduct is any intentional act or omission by a student which misrepresents his or her academic achievements, or attempts to misrepresent these achievements. While not an exhaustive list, the following acts constitute academic misconduct:

* Cheating on examinations**.** The use or attempted use of any unauthorized books, notes or other materials in order to enhance the student’s performance in the examination, copying or attempting to copy from another student’s examination, permitting another student to copy from an examination or otherwise assisting another student during an examination, or any other violation of the examination’s stated or commonly understood ground rules.
* Plagiarism. Any representation of the work of another person as one’s own constitutes plagiarism. This includes copying or substantially restating the work of another person in any written or oral work without citing the source, or collaborating with another person in an academic endeavor without acknowledging that person’s contribution.
* Submitting the same work in more than one course without the consent of all the instructors.
* Misrepresentation or falsification of data
* Allowing another student to represent your work as his or her own.
* Violating the rules of an examination or assignment

Charges of academic misconduct will be brought to the attention of the Associate Dean for

Education, who will review all such cases and decide upon the appropriate action. A student who is found guilty of academic misconduct may be subject to disciplinary action, up to and including dismissal from the School.

**BUSPH Policy on Timely Completion of Course Requirements**All students are required to take examinations on the day they are scheduled and to hand in assignments no later than the due date. Syllabi should indicate examination dates and project (which includes papers) due dates, and penalties associated with late submissions of assignments. If a student cannot take an exam or submit a paper or project on time, the student must request an alternate date in writing from the faculty member. The request for extensions should only be approved if the student has encountered a serious problem that arose unexpectedly and that will make it impossible or extremely burdensome for the student to take the exam or fulfill the assignment requirements as scheduled. In such a circumstance faculty may grant a request for an alternate exam or due date. Substitute examinations should ordinarily be scheduled as soon as possible after the scheduled exam date. Students should be warned that if they request a delay in taking a final exam or in completing a final assignment they may receive a grade of “incomplete.”

It is the student’s obligation to request an extension prior to the time of the exam or date an assignment is due. Only in circumstances when it would be impossible or extraordinarily burdensome for a student to make the request prior to the scheduled date may the faculty member consider a request for an extension of time after the date of the exam or assignment due date.

Faculty may require a student to provide documentation of the circumstances the student submits as the reason for granting an alternative exam or due date, such as a note from a physician.

A student’s failure to adhere to this policy may result in a failing grade being granted for the exam or paper.

Disputes between faculty and students arising out of this policy will be decided by the Associate Dean for Academic Affairs.

Sample Assignment Included here for reference

**PH510 Assignment #2 – Ensuring Food Safety in the US**

**Due: Thursday, February 23, 2012**

**Please read instructions carefully.**

This assignment addresses broader questions related to food safety as a public health problem. ***This assignment is worth 10% 0f your final grade*** and will be graded according to the rubric in the syllabus and posted on Blackboard. The grading rubric will indicate specifically what we are looking for and how you will be graded. This assignment MUST be typed. You should use a reasonably sized font (10-12) and use typical academic margins (1 inch all around), and reasonable line-spacing (2 or 1.5). Be sure your name is on the assignment. You do not need to retype out all the questions, but be sure to clearly label your responses. Your response should be no more than 5 pages.

**These required readings will be very helpful for the assignment. You should also use the assigned readings from the syllabus.**

1. Blaser MJ: How safe is our food? - Lessons from an outbreak of salmonellosis. Editorial N. Engl. J. Med 1996;334(20):1324-1325. Web page: <http://content.nejm.org.ezproxy.bu.edu/cgi/content/full/334/20/1324>.
2. Maki D: Don’t Eat the Spinach — Controlling Foodborne Infectious Disease. Perspective N. Engl. J. Med. 2006;355;19. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/355/19/1952.pdf>
3. NEJM Maki Interview (11-9-2006C.mp3 ) <http://content.nejm.org.ezproxy.bu.edu/cgi/content/full/355/19/1952/DC1>.

**A. Environmental Investigation of Disease on the BU Campus.** This is a continuation of the *hypothetical* investigation of disease that you explored in assignment#1. The investigating team from the Massachusetts Department of Public Health conducted an environmental inspection of the dining facility at Warren Towers and the 22 employees, 15 of whom were food handlers. In addition to a physical inspection of the facility, they interviewed the 14 food handlers who agreed to be questioned.

**Question 1: In order to get clues about which food handler (if any) might have been responsible for transmitting hepatitis A to the diners, what general kinds of questions would the food handlers be asked? [20 points]**

The inspection of the food establishment revealed that it was generally well maintained and run, although a deli bar, where sandwiches were made to order, was found to have several problems. This area had its own preparation area and refrigerator. Each day, newly prepared deli meats, cheeses, vegetables and condiments were added to partially depleted deli bar items from the day before (i.e., without discarding leftover food items). When the deli was open for service, sandwich ingredients were not refrigerated. The deli bar containers were not routinely cleaned. The inspection team collected samples of leftover food, water, and ice. None of the food handlers interviewed report being ill in the last four weeks, but they requested that all cafeteria staff submit stool and blood specimens for analysis. They inspecting team recommended that the City Health Department temporarily close the food establishment to remediate the deficiencies and to retrain employees regarding safe food handling practices.

**Question 2: Does the City Health Department have the authority to close the dining facility? Do you agree with the decision to close it? [20 points]**

**B. Conclusion**

The food handler who initially refused to be interviewed finally agreed to be interviewed. She told the interviewer that she worked in the deli bar section, and that it was her responsibility to prepare all of the fruits and vegetables, and she also prepares and serves sandwiches to students. She said she generally wears gloves while preparing food, and she did not have any significant illnesses before or during the outbreak period. She did report, however, that her husband had had hepatitis about 5 weeks ago. On further questioning she admitted to not always washing her hands after using the toilet and not always using gloves when handling food. She said that she frequently feels pressure to provide prompt service and sometimes cuts corners. A lab test later confirmed that she had recently been infected with hepatitis A; like many people infected with hepatitis A, she must have had a mild case of hepatitis A with minimal symptoms. Most people recover from hepatitis A within a few weeks to 2 months. About 10-15% of infected persons have a prolonged course of illness that lasts up 6 months to a year. The disease is rarely fatal in young people, but the case-fatality rate is about 2% in people over age 50.

**C. Ensuring Food Safety in the US**

Consider the following:

1. Blaser MJ: How safe is our food? - Lessons from an outbreak of salmonellosis. **Editorial** N. Engl. J. Med 1996;334(20):1324-1325. Web page: <http://content.nejm.org.ezproxy.bu.edu/cgi/content/full/334/20/1324>.
2. Maki D: Don’t Eat the Spinach — Controlling Foodborne Infectious Disease. **Perspective** N. Engl. J. Med. 2006;355;19. <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/355/19/1952.pdf>
3. NEJM Maki Interview (11-9-2006C.mp3 ) [**Podcast**] (<http://content.nejm.org.ezproxy.bu.edu/cgi/content/full/355/19/1952/DC1>.
4. An large outbreak of hepatitis A in Pennsylvania that was traced back to a shipment of green onions from Mexico. [Wheeler C, et al.: An outbreak of hepatitis A associated with green onions. N Engl J Med 2005;353:890-7.]

Just read the **abstract** below, but the link to the full article is <http://content.nejm.org.ezproxy.bu.edu/cgi/reprint/353/9/890.pdf>

**[Abstract]** “In November 2003, a large hepatitis A outbreak was identified among patrons of a single Pennsylvania restaurant. We investigated the cause of the outbreak and factors that contributed to its unprecedented size.

**Methods:** A case–control study was conducted among patrons who dined at the restaurant between October 3 and October 6, 2003. Sequence analysis was performed on a 315-nucleotide region of viral RNA extracted from serum specimens.

**Results:** Of 601 patients identified, 3 died; at least 124 were hospitalized. Of 425 patients who recalled a single dining date at the restaurant, 356 (84 percent) had dined there between October 3 and October 6. Among 240 patients in the case–control study, 218 had eaten mild salsa (91 percent), as compared with 45 of 130 controls (35 percent) (odds ratio, 19.6; 95 percent confidence interval, 11.0 to 34.9) for whom data were available. A total of 98 percent of patients and 58 percent of controls reported having eaten a menu item containing green onions (odds ratio, 33.3; 95 percent confidence interval, 12.8 to 86.2). All restaurant workers were tested, but none were identified who could have been the source of the outbreak. Sequences of hepatitis A virus from all 170 patients who were tested were identical. Mild salsa, which contained green onions grown in Mexico, was prepared in large batches at the restaurant and provided to all patrons.

**Conclusions** Green onions that were apparently contaminated before arrival at the restaurant caused this unusually large foodborne outbreak of hepatitis A. The inclusion of contaminated green onions in large batches that were served to all customers contributed to the size of the outbreak.” The sources referenced above serve to underscore the fact that safety of the US food supply is threatened by problems with both domestic food production and foods shipped to the US from foreign sources. Consider the methods by which the US federal and state governments currently protect the food supply.

**Question 3.** If you were an advisor to the Obama administration or to the US Congress, what suggestions would you have for improving the safety of **domestic food supplies**? List your suggestions and provide a brief rationale. **[20 points]**

**Question 4.** Briefly discuss the *challenges* to ensuring food safety in the US when so much of our food comes from **foreign sources**. What are some regulations that could help protect the public’s safety? **[20 points]**

**Question 5.** An effective vaccine for hepatitis A already exists. Suppose that the state of Massachusetts passed a statute requiring that all food handlers be vaccinated for hepatitis A as a condition of employment. Suppose further that an employee of a restaurant refused to be vaccinated and was subsequently fired and then sued for wrongful dismissal, arguing that law makers do not have the right to force him to get a vaccination that is painful and potentially harmful. If the employee lost the case, but then appealed the decision and it ended up being reviewed by the U.S. Supreme Court, what would be the primary criteria by which the constitutionality of the law would be judged? Do you think the US Supreme Court would decide that the law is constitutional or not? Justify your answer briefly. **[20 points]**