

Epidemiology of Foodborne Diseases
POPM*4040
University of Guelph
Fall 2011

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Course Prerequisites:

At least one of 42-323/FOOD*3230 (Food Microbiology) OR 81-324/POPM*3240 (Epidemiology), OR permission of instructor.

Lectures:

Tuesday and Thursday mornings, 8:30-9:50 am, Macdonald Institute (MINS) 103

Course Goal:

To apply the basic principles of epidemiology and systems studies to the study and understanding of foodborne infections and intoxications.

Teaching Strategy:

The course will be primarily lecture based, with encouragement of discussion. Where possible, guest lecturers who are experts in a given topic area will deliver lectures. The focus will be on the skills necessary to investigate and evaluate the epidemiological patterns of foodborne diseases, including the assessment of the magnitude of foodborne disease problems, outbreak investigation, risk assessment, and communication. The emphasis will be on extracting generalizable principles and methodologies for understanding and controlling foodborne diseases.

Course Objectives:

At the end of the course, successful students will:

1. Have studied food and waterborne infections and intoxications that are currently of major interest and importance
2. Have applied epidemiological concepts to the study of the etiology, impact and control of food and waterborne diseases, including their ecological and socio-economic contexts
3. Be able to integrate science with socio-political understanding to make informed arguments about the management of risks and uncertainty related to food and

waterborne diseases

4. Have learned how to communicate the nature of risks associated with food and waterborne diseases to both the general public and specific vulnerable populations.

Marks

Food Diary and Reflection	20% Due: Thursday, September 29 th
Take-home Outbreak Investigation	20% Due: Tuesday, October 25 th
Public Dissemination	20% Due: Thursday, November 17 th
Town Hall Meetings	15% In class Nov. 22 nd & Nov. 24 th
Potluck	5% In class Tuesday November 29 th
Final Exam	20% Dec. 12 th 8:30-10:30am

Late Assignments

All assignments are to be submitted **by 8:30am** on the date that they are due. One mark will be deducted for assignments submitted after class (after 9:50am). An additional mark will be deducted for each additional day that the assignment is late.

Referencing

When submitting to a journal you must use their referencing style. **For the Food Diary & Reflection and Public Dissemination**, use the referencing style of the **Canadian Journal of Public Health**. You can find referencing instructions on the journal website under information for authors. You only need to follow the instructions for referencing and in-text citations.

When selecting references for assignments, websites such as Wikipedia are not appropriate sources. **If you want to use lecture notes, find and reference the original source of the information, not the lecture notes.** The U of G library and Library website are extremely valuable resources for learning how to do a proper literature search and organizing your references. I also recommend that you register for a RefWorks tutorial provided by the library, or complete the online tutorial on library's website.

Comments on Assignments:

1. Food diary and reflection (marked out of 20):

For the **Food diary and reflection (marked out of 5)**, you will be asked to keep a detailed record of what you ate everyday for 5 days. For each meal and day write down (in a chart format):

- What you ate (food types)
- Where it came from (country/region). **Note:** This does not mean “Zehrs”! or where the manufacturer’s head office is located. This may require reading labels, reading price cards on fruits/veggies, asking the store owners about meat or vegetables, calling manufacturers, etc. if foods are not labeled as to origin,
- Method of preparation (e.g. boiled potatoes, baked ham, toasted bread, etc.)
- Where (and how) did you get your information? Who did you contact? What effort did you put into it?

You will then reflect briefly on the foodborne disease implications of that diet, using the ideas and techniques presented in class. **Warning:** this will require some critical thought!! This is a narrative that encompasses all the known facts. For instance, think about:

1. Where your food came from (Ontario? India? Mexico?) – what are the implications of this?? As one example, consider that this will have an impact on how your food was handled en route to you, and therefore the risk posed...
2. The type of food you ate (chicken? tomatoes? sprouts? cheese?), and how you prepared it (raw chicken? fried tomatoes? raw sprouts? What about your cooking techniques, hygiene, how the food has been handled since in your possession, etc. etc.) – What risks are inherent in your diet as a result of your food choices and preparation methods?
3. Is there are larger narrative within which your personal story is unfolding? You might think, for instance, about the relationships between your habits, price, agricultural practices and foodborne diseases.

Write this as if you were writing an editorial/commentary (**marked out of 15**) for the **Canadian Journal of Public Health (CJPH)**, complete with a few references, on the topic: **The Foodborne Disease Implications of My Daily Diet**. You can choose how you want to focus the editorial, but it should provide a comment (i.e. your opinion on a given topic), to spark interest or raise awareness in the readership and raise the profile of given topic.

- Maximum word length: 1,200 words (double-spaced), not including references (include the word count on the title page)
- Commentaries take a “position” and then bring forth arguments or evidence to support that position.

- Attention must be paid to format, grammar, and writing style (do not use contractions!). You can write in the first person, but do not use colloquial language.

You can look at previous issues of the CJPH for examples. The food diary and reflection are due in class on **Sept 29, 2011**.

2. Midterm exam:

The **midterm exam** is a take-home exam and **consists of an outbreak investigation**. You will be given a set of data on **Oct. 18th in class**, showing who ate what, who got sick, etc., and be expected to answer a set of questions based on your analyses. As this is the midterm examination, this is to be done as individuals without consulting others. If you are unable to attend class the day the midterm is handed out, please make arrangements to get the midterm from Evan. **Due in class October 25th, 2011**.

3. Public Dissemination (marked out of 20):

For the **public dissemination (10 marks for project)**, you will be asked to select a target group, a message you think that group needs to be made aware of, and design an appropriate communication to get the message across (poster, workshop, web-page, video, songs, demonstration-education dinner). If your method of communication involves a workshop, talk, seminar, video, or even the presentation of a meal you have prepared, we can give you the opportunity to present it to the class. You are not required to present your project in class, this is optional.

Please select from the following target groups:

- Pregnant women
- College students learning how to cook
- Adventure travelers
- Members of a particular ethnic or religious group (eg Jewish, Muslim, Old Order Mennonite, Hindu, Italian, Chinese, Korean)
- Day care centres
- TV gourmet chefs
- Check-out clerks at a grocery store.

If you have another group in mind, please clear it with Gillian and/or Evan.

You may do this in groups, *if* the project is more complex than a simple poster or brochure and is **approved by Gillian ahead of time**. Only one project per group is required to be handed in. Note that everyone in the group gets the same mark. More than one person or group can select the same target group.

The dissemination justification must include:

- Justification: In 2-3 pages (double-spaced), with references (in the style of the Canadian Journal of Public Health) **(10 marks for justification)**
- Clearly identify: WHO your target group is, WHAT message you want to get across to them, WHY they need to hear this message (use a few references to back this up), and WHY you chose the particular form of communication that you did. Be sure the form of communication and the language you use is appropriate to your particular target group! (the average layperson probably does not know what a "zoonosis" or "enterocyte" is, for example)
- Be creative; try to think beyond the typical pamphlet/brochure.

Let me know if you need video machines as those can be checked out from Classroom Technical Services. Computing Services sometimes offers courses on designing web pages or PowerPoint presentations. If you require rental of video equipment to make your project you are responsible to make your own arrangements. **Due in class November 17, 2011.**

4. Town Hall Meetings (marked out of 10):

There will be two of these. The class will be divided up (by me) into representatives from different stakeholder groups (e.g. industry, farmers/workers, consumer/advocacy groups, media, the government and local city residents etc.). You will be given a controversial topic and asked to defend a particular point of view, using the best science available at a simulated public meeting. This is a role playing game. You are encouraged to make this as realistic as possible – consider your vocabulary, appearance/dress, reactions to things being said in the meeting, etc. What are the special concerns of your group? Which issues are you concerned about and why? Maybe you do not have any concerns. Or maybe you have a lot. Make sure you consider both the science and the economic and social consequences to your advocacy group.

Note: Attendance is required for the Town Hall meetings. That is, we do not want one group skipping out of Town Hall meetings because it is not their turn (we need a lively audience asking tough questions).

Therefore, for your participation marks, you are required to hand in a **brief** comment on your position (i.e. one or two sentences) at the beginning of class. Similarly, at the end of class, you will be required to submit a brief exit statement as to how your position may or may not have changed as a result of the discussion. Therefore, 2 marks (out of 10) are simply for attending and providing your statements. The remaining 8 marks are for the presentation of your arguments. **Done in class on November 22nd & 24th, 2011.**

5. Potluck (marked out of 5):

At the final class, each person will be required to bring in a dish that they have prepared (preferred) or bought, to share with others in the class. You do not need enough for 50 people, just a bit to share. The food will be set out on tables, and next to your dish, you will have one page describing what is in the dish, where it came from (country/region where main ingredients came from), what the food safety concerns might be, and how you have managed those. For the first half hour, everyone will wander around and look at everyone else's dishes and look at the one pagers. Then people will be able to eat what has been brought. The one-pagers will be handed in and will be the basis for the mark. You should have at least one reference.

Grading (as per Undergraduate Degree Regulations and Procedures):

Please familiarize yourself with the grading procedures below:

- **80 - 100 (A) Excellent.** An outstanding performance in which the student demonstrates a superior grasp of the subject matter, and an ability to go beyond the given material in a critical and constructive manner. The student demonstrates a high degree of creative and/or logical thinking, a superior ability to organize, to analyze, and to integrate ideas, and a thorough familiarity with the appropriate literature and techniques.
- **70 - 79 (B) Good.** A more than adequate performance in which the student demonstrates a thorough grasp of the subject matter, and an ability to organize and examine the material in a critical and constructive manner. The student demonstrates a good understanding of the relevant issues and a familiarity with the appropriate literature and techniques.
- **60 - 69 (C) Acceptable.** An adequate performance in which the student demonstrates a generally adequate grasp of the subject matter and a moderate ability to examine the material in a critical and constructive manner. The student displays an adequate understanding of the relevant issues, and a general familiarity with the appropriate literature and techniques.
- **50 - 59 (D) Minimally Acceptable.** A barely adequate performance in which the student demonstrates a familiarity with the subject matter, but whose attempts to examine the material in a critical and constructive manner are only partially successful. The student displays some understanding of the relevant issues, and some familiarity with the appropriate literature and techniques.
- **0 - 49 (F) Fail.** An inadequate performance.

Grade Reassessments: Please address any concerns regarding grading within **2 weeks** of receiving the graded assignment (no later than the final exam for the Public Dissemination Project and Town Hall Meeting grades). Please refer to the following steps for grade reassessments:

1- Review the grading procedures on the previous page to ensure that your work is deserving of a grade increase.

2- Within 2 weeks of receiving the graded assignment you can return the assignment to the Teaching Assistant with a **written explanation** of your concern outlining specifically where you believe an additional mark(s) is deserved.

3- Your TA will review your assignment and your written explanation and decide whether or not your assignment deserves the additional mark(s).

4- After having your assignment reviewed by your TA, if you are unsatisfied you can submit your assignment to the instructor (Gillian Alton) to be completely re-graded.

Note: Your assignment grade may go up, down, or remain the same. This grade is final.

Final Exam: A short answer exam, covering the whole course, but only asking about the important things that everyone should know walking out of the course (so you do not sound like a dope at a cocktail party of food safety types). The final exam will be held Monday December 12th from 8:30 – 10:30 am. The room location will be assigned by the registrar closer to the date of the exam.

Electronic Recording: The electronic recording of classes is expressly forbidden without the prior consent of the instructor. This prohibition extends to all components of the course, including, but not limited to, lectures, seminars, and lab instruction, whether conducted by the instructor or a seminar leader or demonstrator, or other designated person. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

Accommodations: Students who need course adaptations or accommodations because of a disability, or who have emergency medical information to share, are encouraged to please speak to me during the first two weeks of classes.

Students who require accommodation on the basis of religious obligations are referred to the policy at: <http://www.uoquelfh.ca/hre/hrreligious.shtml>

Academic Misconduct: I would like also like to draw your attention to the regulations and procedures on Academic Misconduct contained in the undergraduate calendar at: http://www.uoquelfh.ca/undergrad_calendar/c08/c08-amisconduct.shtml

Required Text:

Food, Sex, and Salmonella: Why our food is making us sick. D. Waltner-Toews, Toronto: NC Press, 2008 (GF 75.W34). This is the second edition of the book. **Available at** the campus bookstore, Chapters, etc.

Recommended Texts & Readings:

Fast Food Nation, Eric Schlosser. Boston: Houghton Mifflin, 2001 (Call #: TX945.3 S355). Available at the campus bookstore, the Bookshelf, and Chapters.

Foodborne Diseases, second edition, edited by D.O. Cliver, (Toronto: Academic press, 2002). (QR 201.F62 F666 2002I).

Control of Communicable Diseases Manual, 17th edition, James Chin, ed. American Public Health Association (RA. 643.A5). This little book is packed with information on infectious diseases (including, but not restricted to foodborne illnesses), their reservoirs, transmission patterns, prevention, and control. An important reference for any public health worker.

Procedures to Investigate Foodborne Illness, 5th edition, published by The International Association for Food Protection, 1999. An excellent booklet if you are making a career of this, but likely too expensive if this is just a course on the way. (RA 601.14 1999).

Additional References:

Procedures to Implement the Hazard Analysis Critical Control Point System, The International Association of Milk, Food and Environmental Sanitarians, 1991 (TP 372.5.P75).

Foodborne Disease Handbook, edited by Y. Hui. New York: M. Dekker, 1994 Vol 1: Bacteria Vol 2: Viruses, parasites and fungi Vol. 3: hazardous substances. QR201.F62 F668.

Human Health Risks from Chemical Contaminants in Foods of Animal Origin, D. Waltner-Toews and S.A. McEwen. Special Issue of Preventive Veterinary Medicine (August 1994) 20: 161-247. The original report is also on the shelf as a reference book in the OVC Library - CA2ON UP160 91C32.

Journals:

All students should subscribe to BITES-L. To subscribe, send an e-mail to: listserv@listserv.ksu.edu and in the body of the message type subscribe Bites-L first name last name eg. subscribe Bites-L Gillian Alton.

This listserv gives you up-to-date information on foodborne disease outbreaks as they are reported in various news media in North America and Europe. We may take time to discuss “breaking stories” in class, and one or more of them may serve as the basis for the essays and town hall meetings.

There is no single journal for epidemiological studies on food and waterborne diseases. For instance, you will find reports in:

- Journal of Food Protection (SF 221.1532 (Main))
- American Journal of Public Health (RA. 421.A41(OVC))
- Canadian Journal of Public Health (RA 421.C21 (OVC))
- The New England Journal of Medicine (R11.N42 (OVC))
- The Lancet (R31.L3 OVC). A reasonably good series on foodborne illnesses began in September 1990
- Epidemiology and Infection (RA 421.J88 (OVC))
- The Journal of the Association of Official Analytical Chemists: Contains articles on both methodology and national survey results for chemical residue (S583.A7 (Main)).
- International Journal of Epidemiology
- International Journal of Parasitology
- Public Health and Epidemiology Report Ontario (PHERO), formerly Ontario Disease Surveillance Report (ODSR) includes reports on foodborne illnesses, and is in the OVC library. This can be ordered from the Ontario Ministry of Health if you want your own copies.

You can find Canadian information at the website for the Public Health Agency of Canada <http://www.phac-aspc.gc.ca/zoono/index-eng.php>. Some of the diseases are specifically listed under “Notifiable Diseases”, where you can look up geographic and temporal trends. See <http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/index-eng.php>

For the U.S., the best information is in Morbidity and Mortality Weekly Report (MMWR) and Emerging Infectious Disease, US Department of Health and Human Services, Centers for Disease Control, Atlanta, Georgia. These can be accessed through the CDC Home Page (<http://www.cdc.gov>) under Publications and Products.

POPM*4040 Class Schedule 2011 (may be subject to change)

Date	Text Chapter ¹	Lecturer	Lectures and Due Dates
Sept. 8 (Thursday)	Chapter 1 & 2	Gillian Alton	Defining the problem: how do people get sick?
Sept. 13	Chapter 1 & 2	Kate Thomas and Shannon Majowicz	Surveillance for Foodborne Disease: how big a problem is it?
Sept. 15	Chapter 1 & 2	Gillian Alton	Basic Epidemiology for Foodborne Diseases
Sept. 20	Chapter 3	Gillian Alton	Salmonella
Sept. 22	Chapter 4	Gillian Alton	Campylobacter
Sept. 27	Chapter 5	Gillian Alton	Staph aureus, B.cereus and C.perfringens
Sept. 29		Gillian Alton	Listeria, Yersinia and Shigella Food Diary and Reflection Due
Oct. 4		Karen Morrison	EcoHealth
Oct. 6	Chapter 4	David Pearl	The E. coli's
Oct 11		Scott Weese	MRSA and C. Difficile in food
Oct. 13	Chapter 6	Gillian Alton	Botulism
Oct. 18		Katy Pintar	Waterborne Disease and QRA Midterm handed-out
Oct. 20		Gillian Alton	Viruses (Norwalk and Hepatitis)
Oct. 25		Victoria Keegan	Outbreak Investigations Midterm Due
Oct. 27	Chapter 7	Andrew Peregrine	Foodborne Parasites
Nov. 1		Andrew Papadopoulos	Health/Risk Communication and Social Marketing Topics for Town Hall Meetings distributed
Nov. 3	Chapter 8	Evan Schneider	Ciguatera and Other Marine Biotoxins
Nov. 8	Chapter 10	Anne Deckert	AMR – Food Safety Concerns
Nov. 10		Gillian Alton	Foodborne Disease Surveillance
Nov. 15		N/A	Lecture catch-up/Group work
Nov. 17		Gillian Alton	PUBLIC DISSEMINATION DUE (possible Dissemination Projects)
Nov. 22		Gillian Alton	Town Hall Meeting
Nov. 24		Gillian Alton	Town Hall Meeting
Nov. 29		Gillian Alton	Potluck and Review

¹ Chapters refer to Food Sex and Salmonella: Why our Food is Making us Sick. The readings are intended to complement, not replace, the lecture material. Please also note that the drop date for this course is November 3, 2011. If you are having concerns about your performance in this class please speak to Gillian prior to this date.