

**Massachusetts
Public Health Inspector Training
(MA PHIT)**

Food Certificate Program

Day 4, Session 3

Foodborne Illness Investigations

MA PHIT- Food Certificate Program, Day 4, Session 3

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Learning Objectives


- Explain MDPH role in foodborne illness prevention and control
- Describe the function of the Working Group
- Summarize the role of local board of health (LBOH)

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Foodborne Illness – Why be Concerned?

The Centers for Disease Control & Prevention estimates that every year, 1 out of 6 Americans get sick from, and 3,000 die, of foodborne illness. The majority of illnesses are caused by viruses!



Reducing foodborne illness by 10% would prevent 5 million Americans from getting sick each year. Preventing a single fatal case of E. coli O157 infection would save an estimated \$7 million.

State and local health departments play a critical role in all aspects of food safety.

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Top five pathogens causing domestically acquired foodborne illness

Pathogen	Estimated number of illnesses	%
Norovirus	5,461,731	58
Salmonella, nontyphoidal	1,027,561	11
Clostridium perfringens	965,958	10
Campylobacter spp.	845,024	9
Staphylococcus aureus	241,148	3
Subtotal		91



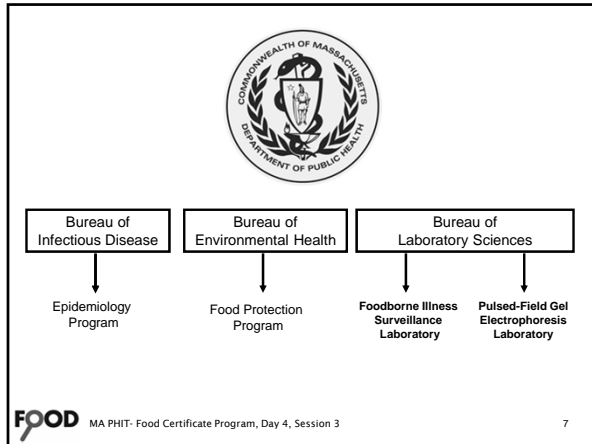
MDPH Role in Food Safety



MDPH Food Protection Program Mission Statement

- MDPH strives to ensure a safe and wholesome food supply in the Commonwealth of Massachusetts by:
 - Developing regulations, policies and interpretations;
 - Conducting routine inspections;
 - Conducting foodborne illness complaint investigations;
 - Participating in cooperative food safety inspection programs;
 - Offering educational programs; and
 - Undertaking regulatory enforcement actions.





The Working Group on Foodborne Illness Control, established in 1986, is a collaboration of the Food Protection Program, Epidemiology Program, and Diagnostic Laboratories at the Massachusetts Department of Public Health (MDPH).

To protect the residents of Massachusetts from foodborne illness.

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Epidemiology

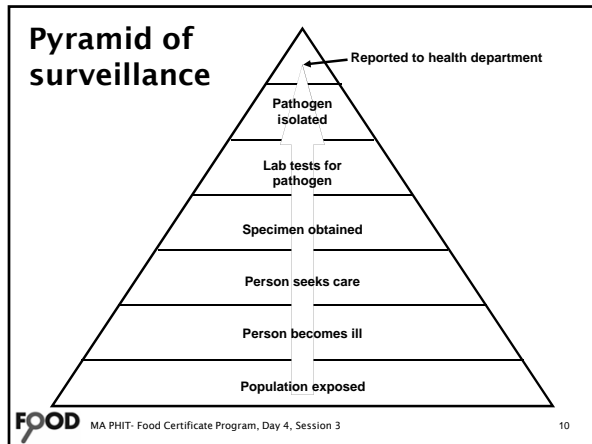
The study of the **distribution** and **determinants of health** in specified **populations**, and the application of this study to **control** health problems.

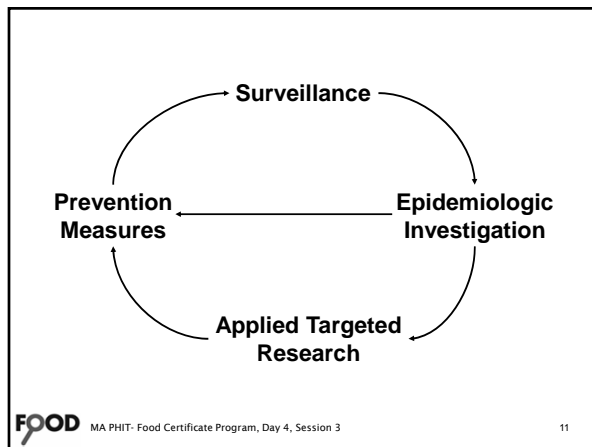
COMMUNICABLE AND OTHER INFECTIOUS DISEASES REPORTABLE IN MASSACHUSETTS TO LOCAL HEALTH DEPARTMENTS

INITIATE INVESTIGATION IMMEDIATELY FOR BOTH SUSPECT AND CONFIRMED CASES OF THE FOLLOWING INFECTIOUS DISEASES:

• IMMEDIATE INVESTIGATION AND CONTROL CASE REPORTS BY HEALTH CARE PROVIDERS TO LOCAL HEALTH DEPARTMENTS

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- ### Foodborne Illness
- Not just diarrhea
 - Constantly evolving
 - Changes in food industry
 - Globalization
 - Centralized production
 - New products and processes
 - Changes in food preparation practices
 - Changes in population
 - More elderly, immuno compromised persons
 - Changes in eating style
 - Immigration and travel
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Foodborne Outbreaks

- Definition:
 - The occurrence of two or more cases of a similar illness resulting from the ingestion of a common food OR different foods in a common place.
- Notification:
 - Surveillance--MAVEN
 - Foodborne illness complaints
 - Lab-based surveillance

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Sources of foodborne pathogens

Step	Opportunity for contamination
Production and harvest	Irrigation water, manure, lack of field sanitation
Initial processing	Wash water, handling
Distribution	Ice, dirty trucks
Final processing	Wash water, handling, cross contamination
Consumption	Time and temperature

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Example

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    graph TD
      A[Patient Eats Contaminated Food] -- "1-3 Days" --> B[Patient Becomes Ill]
      B -- "Time to Contact with Health Care System (1-2 Days)" --> C[Stool Sample Collected]
      C -- "Time to Diagnosis (1-3 Days)" --> D[Salmonella Identified]
      D -- "Shipping Time (8-7 Days)" --> E[Public Health Lab Receives Sample]
      E -- "Sequencing and 'DNA Fingerprinting' (2-10 Days)" --> F[Cases Confirmed as Part of Outbreak]
  
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Hypothesis-generating Questionnaire

2b. What are the name(s) of the item(s) from Menu or Package (for instance Spicy Tuna, Dragon Roll, California Roll, Maguro Nigiri)?

2c. What were the types of sushi you ate? For example did your meal include:

<input type="checkbox"/> Special Roll (examples California or Dragon Roll)	<input type="checkbox"/> Crab stick (imitation crab)	<input type="checkbox"/> Other Ingredients:
<input type="checkbox"/> Nigiri (small clump of rice with piece of seafood on top)	<input type="checkbox"/> Real Crab	<input type="checkbox"/> Cucumber
<input type="checkbox"/> Maki (smaller roll usually with seaweed)	<input type="checkbox"/> Roe-tovar (fish eggs)	<input type="checkbox"/> Avocado
<input type="checkbox"/> Inari (pouch of fried tofu filled with rice)	<input type="checkbox"/> Other Seafood (Specify)	<input type="checkbox"/> Egg
<input type="checkbox"/> Sashimi (Raw fish without rice)		<input type="checkbox"/> Rice
<input type="checkbox"/> Poke (Hawaiian-style Sashimi of Raw fish chunks)		<input type="checkbox"/> Seaweed (nori)
<input type="checkbox"/> Other		<input type="checkbox"/> Sesame seeds
		<input type="checkbox"/> Other (Specify):

2d. What were the ingredients in the Sushi? Were there items such as:

Seafood Ingredients:	<input type="checkbox"/> Crab stick (imitation crab)	<input type="checkbox"/> Other Ingredients:
<input type="checkbox"/> Raw Tuna (Maguro)	<input type="checkbox"/> Real Crab	<input type="checkbox"/> Cucumber
<input type="checkbox"/> Raw Salmon	<input type="checkbox"/> Roe-tovar (fish eggs)	<input type="checkbox"/> Avocado
<input type="checkbox"/> Shrimp (ebi)	<input type="checkbox"/> Other Seafood (Specify)	<input type="checkbox"/> Egg
<input type="checkbox"/> Eel (Unagi)		<input type="checkbox"/> Rice
<input type="checkbox"/> Squid (Ika)		<input type="checkbox"/> Seaweed (nori)
<input type="checkbox"/> Other Whole Fish (Specify):		<input type="checkbox"/> Sesame seeds
		<input type="checkbox"/> Other (Specify):

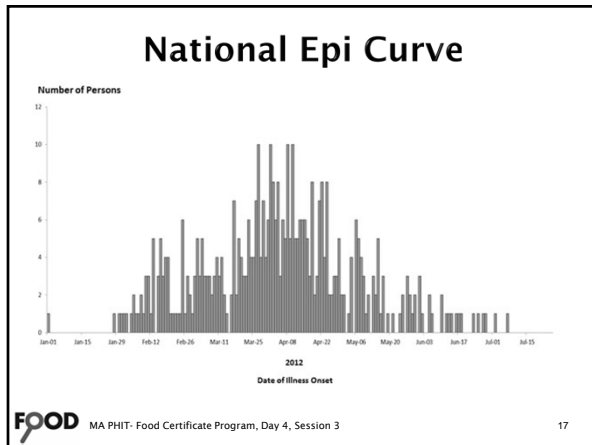
2e. Did you eat any condiments, sauces, or garnish(es) such as:

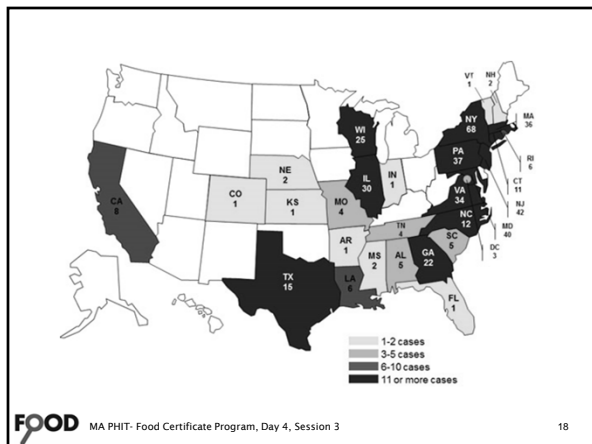
<input type="checkbox"/> Soy Sauce	<input type="checkbox"/> Shredded radish	<input type="checkbox"/> Other (Specify):
<input type="checkbox"/> Wasabi (Hotteradish)	<input type="checkbox"/> Carrot	
<input type="checkbox"/> Mayonnaise	<input type="checkbox"/> Pickled Ginger	

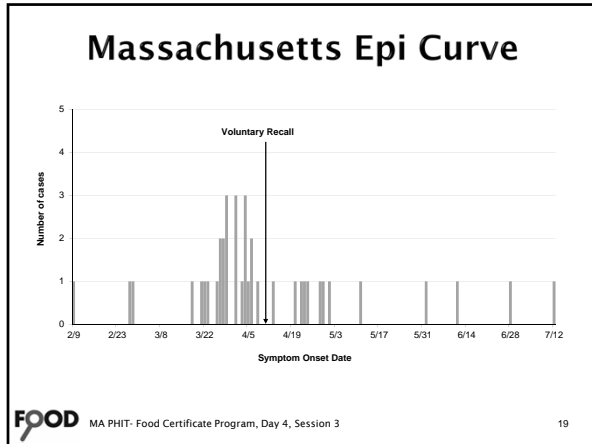
2f. What other food items did you eat during your sushi/sashimi meal?

<input type="checkbox"/> Soy Beans (Edamame)	<input type="checkbox"/> Miso Soup	<input type="checkbox"/> Other (Specify):
<input type="checkbox"/> Seaweed Salad	<input type="checkbox"/> Deep Fried Spring Roll, Type= Vegetarian, Shrimp (CIRCLE) Other (Specify):	
<input type="checkbox"/> Fried Spring Roll, Type= Vegetarian, Shrimp (CIRCLE) Other (Specify):	<input type="checkbox"/> Fresh (Non-Fried) Spring Roll, Type= Vegetarian, Shrimp (CIRCLE) Other (Specify):	
<input type="checkbox"/> Other (Specify):		

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LBOH Role in Foodborne Illness Investigation

- Take in FBI complaints
- Work with MDPH
- Inspect, investigate, and assess risk
- Exclude/restrict ill food employees (as defined in 590.003 (C))





Class Brainstorm: what are some LBOH activities that may have occurred, for this outbreak?

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Foodborne Illness Investigations

LBOH, may:

- Interview Person in Charge (PIC) and possibly employees
- Ask about ill employees and recent employee absences
- Obtain a list of food employees (incl. duties and schedules)
- Review the menu
- Identify the source(s) of suspect foods
- Observe and document general food preparation practices

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Foodborne Illness Investigations (cont'd)

LBOH may:

- Obtain the suppliers' receipts for the suspect foods
- Obtain original packaging if possible
- Take samples (consult with MDPH first)
- Conduct a food preparation (HACCP) risk assessment for suspect foods



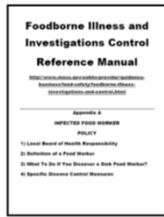
Foodborne Illness Investigations (cont'd)

LBOH may:

- Conduct a trace-back (or forward) of suspect foods
- Participate in recalls
- Summarize and determine contributing factors
- Recommend actions to prevent future outbreaks
- Initiate corrective actions

Foodborne Illness Investigations (cont'd)


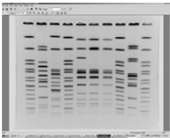

- Who and how do I exclude employees?



- <http://www.mass.gov/eohhs/docs/dph/environmental/foodsafety/ref-manual/appendix-a.pdf>

Laboratory Role

- ▣ *PFGE*
 - *Salmonella*
 - *E. coli*
 - *Shigella*
 - *Campylobacter*
 - *Listeria*
 - *Cholerae*



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QUESTIONS?

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