Foodborne Disease Outbreak Investigations

A Practical Guide For Local Health Departments

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PREFACE

The purpose of this manual is to improve the outcome of foodborne disease outbreak investigations by providing an overview of the roles of the investigators that constitute the foodborne outbreak investigation team. It is intended to provide practical guidance regarding the methods and procedures used to obtain information critical in determining the cause of the outbreak that will help to prevent additional exposure and illness. It is also intended to highlight some of the common investigation errors to avoid. As this guidance is primarily intended for local health departments with a focus on the role of the sanitarian/environmental health specialist, their role and contributions are emphasized. Because the procedures used by epidemiologists and the laboratory are highly specialized and not the focus of this document, only their general activities and those that relate to the environmental aspects of the investigation are presented here. Two excellent resources that provide a more comprehensive overview of outbreak investigations are Procedures to Investigate Foodborne Illness¹ and Guidelines for Foodborne Disease Outbreak Response².

This manual only serves as a reference tool because NO TWO OUTBREAKS ARE ALIKE. Past experience has shown that each outbreak is unique and although there are basic steps for conducting investigations, each investigation must be conducted with an open mind while considering all the variables that are particular to the outbreak. The steps taken will vary depending on the agent, population affected, number exposed, date of notification, setting, cooperation of individuals who have been exposed and establishment staff, availability of resources, and training/experience of investigators.

This variability poses a challenge in developing a ‘standard procedure,’ a ‘bullet list,’ or the ‘step by step’ instructions many of us have come to rely on. Since most outbreak investigations do not progress in a neat linear fashion (many activities are conducted concurrently and will affect what other information is required or the direction of the investigation) it is impossible to design a scheme that will account for all of these factors and, most importantly, the critical thinking that is essential for a successful investigation. In spite of this challenge, this manual attempts to provide the foundation and common steps required to perform a thorough and accurate investigation that may take unexpected turns and require varied approaches. Timely sharing of information is crucial in developing and carrying out the investigation plan. For this reason it is important that the investigation is viewed as a collaborative and cooperative effort between local health departments, the Connecticut Department of Public Health (DPH), Food Protection Program, the Epidemiology Program, the DPH Laboratory, and others, as warranted.

Early detection, notification, and a rapid response are the cornerstones to an effective foodborne outbreak investigation. It is the intent that increased knowledge regarding the responsibilities of all parties involved will lead to an improved collaborative effort, which in turn will lead to increased communication and a decrease in the confusion and frustration sometimes associated with investigations of foodborne disease outbreaks.

Comments or questions regarding this guidance document should be referred to the Food Protection Program at 860-509-7297.
I. INTRODUCTION

A. What is a Foodborne Outbreak?

A foodborne outbreak is the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food. An outbreak may also result from ingestion of foods from a common source such as a restaurant where multiple foods were contaminated by an ill food worker or a contaminated surface, or when an establishment receives food that was previously contaminated somewhere along the farm-to-fork chain.

B. Regulatory Authority to Investigate Outbreaks

19a-36-A6. Investigation and control of reportable disease and outbreaks by the department

(a) The department, in cooperation with the local director of health, in the investigation and control of reportable disease shall make or cause to be made such investigation as it deems necessary and shall secure all such data as may assist it in establishing adequate control measures.

(b) In order to investigate and control any apparent outbreak or unusual occurrence of reportable disease, the department shall institute such special disease surveillance, follow-up reports and control measures as it deems necessary.

(c) Individual medical information pertaining to cases of reportable disease, persons affected by outbreaks of disease or significant increases in the rate of nosocomial infection shall be provided when requested to an investigator who presents official identification of the department or the local department of health. Such an investigator may be an employee of the State or local health department.

(Effective October 25, 1989)

C. Goals of a Foodborne Outbreak Investigation

1. Identify the cause of the outbreak to prevent additional cases of illness.
2. Develop interventions to prevent similar outbreaks from occurring in the future.
3. Improve our understanding of foodborne diseases by identifying the contributing factors and antecedents that cause individual outbreaks.
II. NOTIFICATION OF AN OUTBREAK

Detection and subsequent notification of outbreaks can occur in a variety of ways including:

1. **Notification by the Public (by Ill Patrons)**
   - **Alerts** - Single complaints of suspected foodborne illness are monitored to look for common factors such as food establishment, onset, food product, or demographics that may be indicative of an outbreak. For example, in one day 15 alerts may be received that all mention dining at Restaurant X or consumption of refried beans, or were from unrelated individuals who all resided in the same town.
   - **Multiple Illnesses** - Notification of an outbreak may be received from attendees of a party, special event, or other large gathering who become ill and report the occurrence to the local or state health department.

2. **Routine Surveillance** The state or local health department (LHD) receives confirmed laboratory results for a reportable foodborne disease. These results include notification of local or multi-state outbreaks based on common Pulsed Field Gel Electrophoresis (PFGE) results or other factors.

3. **Notification by a Health Care Worker** A physician, nurse, infection preventionist, facility director, or other health care practitioner reports a suspected outbreak by phone to the state/local health department, based on the number of patients reporting who have similar symptoms, exposure, etc.

A. Notification by the Public

**Alerts**
The *Foodborne Alert Complaint Form* (Appendix A) should be used to collect information when a single complaint of a possible foodborne illness is received at a local health department. Once completed, the form should be faxed as soon as possible but within 24 hours of receipt of the initial call to the Food Protection Program (FPP) at (860) 509-8071.

**Completing the Form:**
The sanitarian/environmental health specialist (EHS) is usually responsible for interviewing the complainant using the FPP’s *Foodborne Alert Complaint Form*. In some departments the epidemiologist, public health nurse, or health educator is responsible for the form’s completion. In an effort to ensure objectivity and accuracy it should not be completed by the complainant or support staff.

It is important to complete all sections of the form and obtain information about their symptoms, numbered by the order in which each symptom occurred. Understanding the order of symptoms is a very important piece of information because vomiting first may indicate one etiology while diarrhea first will lead the investigator to consider others. Symptoms and onset time play a key role in determining which exposure is most likely the source of the illnesses. Since it is common for individuals to blame the last food they ate as the cause of their illness, it is critical to obtain a 72-hour food history. The history identifies other foods that the complainant consumed that may have caused the illness. To encourage the complainant’s recall, it may be necessary to ask probing (exploratory) questions like – “Did you dine out anywhere?” “Meet anyone?” “Do anything special?” “Does the
To avoid influencing the complainant’s response, questions should be asked in a neutral manner. The FPP has provided interview training to LHDs in the past and will continue to include in future outbreak investigation training.

It is important to fill out the complaint form as completely as possible! Incomplete complaint forms often require the FPP to make follow up calls to the local health department as well as cause avoidable delays in the investigation process. This form is intended primarily for single cases of foodborne illness. PLEASE DO NOT USE THE FORM TO INTERVIEW CASES ONCE AN OUTBREAK IS IDENTIFIED. To do so will likely jeopardize the investigation, waste time, and result in data that cannot be analyzed. If the interviewer checks off the Outbreak box (on page 1) as opposed to the Alert box, the FPP should be notified immediately so that the proper investigation procedures can be instituted.

Responding to the Complaint:
Once the form has been completed, the EHS must assess the validity and significance of the complaint to determine the appropriate response, such as a possible correlation between symptoms, foods, or the establishment that would warrant an investigation. For example, if the complainant experienced nausea and vomiting thirty minutes after consuming a chicken salad sandwich at a restaurant, a reasonable response would be to:

1. Visit the establishment to interview and observe food workers
2. Assess preparation practices of the chicken salad with an emphasis on bare hand contact
3. Examine hands of staff for wounds/burns
4. Review cooling and holding temperatures, etc.

More typically, the scenario presented by a complainant is not as obvious as this example. Although not all alerts are actually foodborne, all foodborne illness complaints should be taken seriously, as any single complaint may be the index case of a foodborne outbreak.

The response to the complaint will vary depending on the information received. It can range from faxing the form to the FPP and making a phone call to the food establishment, to conducting an in depth site investigation. The response should begin promptly. If it is the beginning of an outbreak, the sooner an investigation can be started, the more likely it is to be successful in limiting additional illnesses. While a lapse in response time may result in incomplete data gathering during the investigation, a failure to investigate a valid complaint endangers the public and may lead to additional cases of foodborne illness.

**It is very important that all alerts are documented since any single case may be the beginning of an outbreak.**
**Remember, the objective is to prevent foodborne illness!**

Some indicators that an onsite investigation should be made include but are not limited to:

1. A case that has been hospitalized with illness suspected to be linked to a food establishment
2. A case with a confirmed foodborne pathogen and a clear association with a food establishment
3. An alert involving a food establishment that has been cited for significant or repeat risk factor violations during inspections
4. A case with a probable association with a food item of interest – e.g. raw shellfish, undercooked beef, fresh squeezed juice, etc.

If a site investigation is warranted, the EHS should visit the establishment immediately or as soon as is reasonably possible. Do not perform a routine inspection! Conducting an onsite investigation immediately will allow the EHS to assess the conditions in the establishment, speak with food workers about illness and preparation practices, and find out about any complaints received by the owner/manager. If unsure, the LHD may consult with the FPP to determine the appropriate response. Note: (As a rule, food, stool and environmental samples are not collected for a single complaint. Exceptions can only be made in consultation with DPH.)

If an onsite investigation is not feasible or warranted, the establishment must, as a minimum, be:

1. Notified that a complaint regarding an alleged foodborne illness was received
2. Asked if they have received other complaints of illness
3. Asked if any food workers have been absent from work due to illness or recently experienced gastrointestinal symptoms

The EHS should direct their inquiries to the qualified food operator (QFO), owner, operator, and other staff as appropriate.

Review with the QFO, manager, or owner the Connecticut State Regulations pertaining to:

1. Reporting food worker illness to the local health department [per §19-13-B42(r) of the Regulations of Connecticut State Agencies]
2. Ill food handler exclusion policies
   - Does the QFO ask food workers their symptoms if they call out or go home sick?
   - Does the QFO know that ill food workers must be reported to the local health department?
   - Are the Ill Food Worker Project posters posted? (If not, this may be a teachable moment!)
3. Minimizing bare hand contact with ready-to-eat foods
4. Hand washing policies and procedures
5. Sanitization practices

Note: If the establishment suspected by the complainant of being responsible for illness is located in another local health department’s jurisdiction, the EHS will need to contact the local health department with jurisdiction (and the FPP) to inform them of the complaint. The EHS must then forward all information from the complainant to the local health department having jurisdiction so that the investigation can be initiated. When the establishment suspected of causing the illness is located in a different jurisdiction, the EHS receiving the initial call should try to collect as much information as possible. Often an opportunity to collect important information is missed if the call is referred but no one at the health department that has jurisdiction is available to take the call. If this occurs, the FPP should be notified. The EHS should also remind the caller that they will likely be contacted again for additional information.

Contact the FPP at (860) 509-7297:
1. If you are not sure whether or not a single complaint warrants a follow up investigation
2. If information from an alert or follow up investigation indicates an outbreak
3. If other health department personnel cannot be reached in a multi-jurisdictional complaint
Multiple Illnesses
The most common way that outbreaks are reported is by direct notification from attendees of a large gathering when it is known that there are multiple cases of illness. For example, the organizer of an event such as a birthday party calls to report that several attendees have become ill. Reporting is also common in other settings where individuals know each other such as church suppers, weddings, and at conferences, or where the same people eat together regularly such as in schools, workplace cafeterias, and health care facilities. If the local health department receives a call from a member of the public and during the interview the person mentions that they are aware of other multiple illnesses, the EHS should complete the Alert Form entirely and immediately call the FPP to report a possible outbreak. Do not attempt to contact other ill cases, as this may cause delays. If it is determined that an investigation will be conducted, the EPI Program will contact these individuals to conduct a full EPI interview.

B. Routine Surveillance

Laboratory directors report positive laboratory findings for reportable diseases including many foodborne pathogens to DPH and the local health department where the individual resides. EPI and/or LHDs may identify clusters based on an increased number of reports, unusual or clustered demographics, or common foods or establishments by cases upon interviews.

The DPH LAB or EPI may also note clusters of cases when isolates sent by clinical laboratories are confirmed at the State LAB and identify multiple cases of the same etiology. Pulsed Field Gel Electrophoresis (PFGE) (or DNA fingerprint) patterns of bacteria causing illness in CT cases are also compared to patterns reported by other states and may reveal possible links to multi-state outbreaks.

C. Notification by a Health Care Worker

Health care providers (from hospitals, clinics, etc.) are also required to report reportable diseases, as are school administrators, camp directors, day care providers, persons in charge of any establishment producing, handling, or processing food, and others. With the exception of botulism, cholera, and staph enterotoxin, which are reportable immediately by phone, cases are to be reported by mail within 12 hours of recognition or strong suspicion of disease.

Note: A foodborne outbreak is designated as a Category 1 reportable disease (in the list of ‘Reportable Diseases and Laboratory Reportable Significant Findings’ that is published each January in the Connecticut Epidemiologist and available on the DPH website) and is reportable immediately by phone to DPH and the local health department on the day of recognition or when there is a strong suspicion of disease. (Example: An emergency department physician calls the health department after treating 5 individuals for gastroenteritis who all reported eating a meal at the same restaurant.)

D. Response to Notification of a Foodborne Outbreak

Once it has been determined that an outbreak is likely occurring, the investigative team is notified and assembled. Prompt notification is essential as a delay in notification can hinder the investigation.
1. Upon notification or suspicion of an outbreak the CT DPH will contact the local health department (director of health or if the director is not available, environmental staff will be contacted) LHDs will contact EPI and/or the FPP upon notification or suspicion of an outbreak.
2. DPH EPI and/or FPP will notify the LAB to prepare for clinical, food, and/or environmental samples.
3. Except for the LAB, contact shall be made the same day as notification was received.
III. CONDUCTING FOODBORNE OUTBREAK INVESTIGATIONS

A. The Investigative Team and Their Roles

A successful foodborne outbreak investigation requires trained and experienced personnel in the fields of epidemiology, environmental health, and laboratory science. To maximize efficiency, it is important that each team member understands their role and the roles of the other team members. Depending on the availability, training, and staff experience, roles may sometimes change. Although some activities may overlap between investigators, in general, responsibilities are:

**Epidemiologist** – conducts foodborne disease surveillance; characterizes the outbreak; develops hypothesis; conducts special studies and analyses that identify risk factors such as implicated food items; and interviews cases

**Sanitarian/EHS** – conducts environmental investigation that may include interviewing food workers; collecting food worker stool specimens; collecting food and environmental samples for laboratory analysis; conducting food preparation reviews (food flows); identifying contributing factors (contamination, proliferation, and survival) and antecedents; implementing and monitoring long and short-term controls

**Laboratory** – performs analytical tests on clinical, food, and environmental samples to identify the agent that caused the outbreak

**Communication** between team members has to be shared in all directions. Given the large volume of information that needs to be shared, this can be a daunting task. However, it is a critical task as the findings of one team member may affect the direction of the investigation of another team member. Depending on the nature of the outbreak, information sharing can be accomplished with daily (or more) direct calls, utilizing MAVEN, conference calls, emails, end of the day summaries, face-to-face meetings, or any other method that works and is agreed upon by the investigative team at the beginning of the investigation. Contact information should be shared between all investigators.

Some outbreaks receive media attention. It is recommended that team leaders determine early on in the investigation which agency or department will take the lead in responding to media inquiries and who specifically will act as the Public Information Officer. Care should be taken to avoid releasing confidential information (see Confidentiality of Data section) and to coordinate a uniform message.

The following table taken from the 2014 *Guidelines for Foodborne Disease Outbreak Response* manual by the Council to Improve Foodborne Outbreak Response provides a good overview of the roles and activities of each investigator.
Table 5.1. Investigation activities for outbreaks associated with events or establishments reported through foodborne illness complaint systems*

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>EPIDEMIOLOGY</th>
<th>ENVIRONMENTAL HEALTH</th>
<th>PUBLIC HEALTH AND/OR FOOD TESTING REGULATORY LABORATORY</th>
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<tbody>
<tr>
<td>Identify etiologic agent.</td>
<td>• Contact health-care providers of cases who have sought medical attention.</td>
<td>• Interview management to determine whether it has noticed any ill employees or any circumstances that could cause a foodborne illness.</td>
<td>• Contact clinical laboratories that might have performed primary cultures on cases, and obtain specimens.</td>
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<td>• Interview cases to characterize symptoms, incubation period, and duration of illness.</td>
<td>• Interview food workers to determine illness. This activity also could be conducted by nursing/health-care staff.</td>
<td>• Test stool samples to identify agent.</td>
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<td>• Obtain stool specimens from cases.</td>
<td>• Obtain stool specimens from ill or all food workers. This activity could also be conducted by nursing/health-care staff.</td>
<td>• Test samples of implicated food items to identify agent.</td>
</tr>
<tr>
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<td>• Determine whether symptoms, incubation period, or duration of illness suggest a likely pathogen.</td>
<td>• Obtain and store samples of implicated and suspected food items and ingredients.</td>
<td>• Subtype all isolates as soon as possible after receipt.</td>
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<tr>
<td></td>
<td>• Establish case definition based on confirmed diagnosis or clinical profile of cases.</td>
<td>• Determine whether setting or food item suggests a likely pathogen.</td>
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<td>Identify persons at risk and determine size and scope of outbreak.</td>
<td>• Obtain from event organizer a list of persons attending event, or, if possible, list of persons patronizing the establishment during the outbreak period.</td>
<td>• Obtain list of reservations for establishment, credit card receipts, receipts for take-out orders, inventory of foods ordered at establishment, or guest lists for events. Where possible, obtain information electronically.</td>
<td>• Contact clinical laboratories to identify additional stool specimens being cultured.</td>
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*Includes use of food supply chain stellt investigation methods.
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<th>OBJECTIVE</th>
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<tr>
<td>Identify mode of transmission and vehicle.</td>
<td>• Interview identified cases and controls or well meal companions about all common exposure sources. Calculate odds ratios for specific exposures. • Interview persons with identified exposures to determine attack rates and relative risks for specific exposures.</td>
<td>• Obtain menu from establishment or event. • Interview food workers to determine food-preparation responsibilities. • Reconstruct food flow for implicated meal or food item. • Identify contributing factors and environmental antecedents. • Obtain samples of implicated food. • Obtain environmental samples from food contact surfaces or possible environmental reservoirs.</td>
<td>• Test implicated food and environmental samples to confirm presence of agent. • Subtype all isolates as soon as possible after receipt. • Conduct applied food-safety research to determine ability of agent to survive or multiply in implicated vehicle and how vehicle might have become contaminated.</td>
</tr>
<tr>
<td>Identify source of contamination.</td>
<td>• Combine descriptive and analytical epidemiology results to develop a model for the outbreak.</td>
<td>• Interview food workers to determine food-preparation responsibilities. • Reconstruct food flow for implicated meal or food item. • Evaluate food flow for implicated meal or food item to identify contamination event at point of preparation or service. • If no contamination event identified, trace source of ingredients of implicated food item back through distribution to point where a contamination event can be identified or, if no contamination events can be identified during distribution, to source of production.</td>
<td>• Evaluate results of all outbreak-associated cultures to highlight possible relations among isolates from clinical, food, and environmental samples. • Conduct applied food safety research to determine how vehicle might have become contaminated.</td>
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<td>Identify contributing factors and antecedents</td>
<td>Summarize information to identify confirmed or suspected agent.</td>
<td>Summarize information to identify confirmed or suspected food vehicle.</td>
<td>Evaluate results of environmental assessment, given identification of agent and results of epidemiologic investigation, to identify factors most likely to have contributed to outbreak and their environmental antecedents.</td>
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<td>Determine potential for ongoing transmission and need for abatement procedures.</td>
<td>On the basis of agent, incubation period, and likelihood of secondary spread, create epidemic curve, and evaluate the course of the epidemic to determine whether additional cases may still be occurring.</td>
<td>If outbreak appears to be ongoing, review possible control measures in collaboration with environmental health specialists.</td>
<td>Implement control measures to prevent further exposures:</td>
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<td>o Verify that all food workers who pose a risk for transmission have been excluded or restricted, as needed;</td>
<td>o Verify that potentially contaminated foods have been properly disposed;</td>
<td>o Verify that food contact surfaces and potential environmental reservoirs have been adequately cleaned and sanitized;</td>
</tr>
<tr>
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<td>o Modify menu.</td>
<td>o Modify menu.</td>
<td>o Modify menu.</td>
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<td>If any of these measures cannot be verified, review additional control measures, or if further exposure appears likely, alert public or close premises.</td>
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* These are general categories of roles to demonstrate typical investigation activities. The roles can overlap considerably, especially in local health departments. The persons who actually conduct each of these activities will vary by agency and investigation.
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</table>
| Identify mode of transmission and vehicle. | - Interview cases as soon as possible with standardized detailed exposure history questionnaire to identify possible common exposures (described in detail below). In some situations, cases are interviewed as soon as they are reported and before an outbreak has been recognized.  
- Establish case definition on the basis of characteristics of agent that led to detection of outbreak.  
- Characterize cases by person, place, and time, and evaluate this descriptive epidemiology to identify pattern possibly associated with particular food items or diets.  
- Compare detailed exposure history questionnaire frequencies against known or estimated background exposure rates, such as those in FoodNet Atlas of Exposures, to identify suspected food item.  
- Interview non-ill community controls or non-outbreak-associated III persons to obtain detailed exposure information to be used in a case-comparison analysis of exposures.  
- Obtain shopper card information to identify and verify grocery purchases and possibly determine background rates of purchase of item.  
- Document brand names and product code information for prepackaged food items.  
- Analyze exposure information comparing cases to relevant comparison group (e.g., non-ill controls or cases not associated with outbreak) to implicate food item or nonfood-exposure source. | - Contact restaurants, grocery stores, or other locations identified by multiple cases to verify menu choices, identify ingredients, and identify distributors and/or source(s) for ingredients and/or food items of interest.  
- Obtain samples of suspected food items. Work with appropriate regulatory authority to ensure that food samples are collected and maintained with appropriate chain of custody (for example, USDA-FSIS Directive 10,000.1). This will help the regulatory authority to take appropriate regulatory action.  
- Conduct an investigational traceback to determine whether a suspected food vehicle from multiple cases has a distribution or other point in common.  
- If specific food item or ingredient is implicated, conduct formal regulatory traceback. | - Store collected food samples, pending results of epidemiologic analyses.  
- Culture implicated food samples to confirm presence of agent.  
- Conduct serotype/ genotype tests, and further characterize pathogen as necessary for investigation.  
- Conduct applied food-safety research to determine ability of agent to survive or multiply in implicated vehicle and how vehicle might have become contaminated. |
<table>
<thead>
<tr>
<th>Identify persons at risk and determine size and scope of outbreak.</th>
<th>Identify source of contamination.</th>
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</table>
| • Alert health-care providers of possible outbreak to identify additional persons seeking medical care, and review laboratory reports and medical charts at hospitals or physicians’ offices to identify possible cases.  
• Ask cases if they know of others who are similarly ill.  
• Depending on nature of outbreak, take additional steps as warranted. Examples include reviewing employee or school absences, reviewing death certificates, surveying population affected, or directly asking members of the public to contact the health department if they have the illness under investigation. | • Combine descriptive and analytical epidemiology results to develop a model for outbreak. | • Review foodborne illness complaints to identify undiagnosed cases that could be linked to outbreak.  
• Contact restaurants, grocery stores, or other points of final service visited by multiple cases to identify employee illnesses or foodborne illness complaints from patrons.  
• Contact clinical laboratories to identify additional stool specimens being cultured.  
• Speed up referral and subtyping of outbreak pathogen. |
| Trace source of implicated food item or ingredients through distribution to point where a contamination event can be identified or to source of production if no contamination events can be identified during distribution.  
• Conduct environmental assessment of likely source of contamination, including  
  o Reconstruct food flow for implicated food item.  
  o Interview food workers to determine food-preparation responsibilities and practices before exposure.  
  o Obtain samples of implicated food or ingredients.  
  o Obtain environmental samples from food contact surfaces or potential environmental reservoirs. | Evaluate results of all outbreak-associated cultures to highlight possible relations among isolates from clinical, food, and environmental samples.  
• Conduct applied food-safety research to examine likely sources of contamination.  
• Work with appropriate regulatory authority to ensure that food samples are collected and maintained with appropriate chain of custody (for example, USDA-FSIS Directive 10,000.1). This will help the regulatory authority to take appropriate regulatory action. |
Table 5.2. Investigation activities for outbreaks identified by pathogen-specific surveillance

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>EPIDEMIOLOGY</th>
<th>ENVIRONMENTAL HEALTH</th>
<th>PUBLIC HEALTH AND/OR FOOD TESTING REGULATORY LABORATORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify contributing factors and antecedents.</td>
<td>• Summarize information to identify confirmed or suspected food vehicle.</td>
<td>• Evaluate results of environmental assessment, given identification of agent and results of epidemiologic investigation, to identify contributing factors and antecedents.</td>
<td>• Summarize information about culture results from clinical, food, and environmental samples. • Provide background statistics on pathogen prevalence.</td>
</tr>
<tr>
<td>Determine potential for ongoing transmission and need for abatement procedures.</td>
<td>• Create and evaluate epidemic curve to determine whether additional cases might still be occurring. • If outbreak appears to be ongoing, continue surveillance, and review potential abatement procedures.</td>
<td>• Verify that food workers who might have been infected during outbreak and who pose a risk for transmission have been excluded or restricted, as needed. • Verify that potentially contaminated foods have been removed from distribution. • Train staff on safe food-preparation practices. • Modify food-production and food-preparation processes by implementing appropriate preventive controls. • Modify menu.</td>
<td>• Assess status of completed and pending cultures to identify gaps that may suggest a potential for ongoing transmission.</td>
</tr>
</tbody>
</table>

* These are general categories of roles to demonstrate typical investigation activities. The roles can overlap considerably, especially in local health departments. The individuals that actually conduct each of these activities will vary by agency and investigation.
B. The Epidemiologist’s Role

The role of the epidemiologist is a critical component of the foodborne illness investigation process. Typically, the epidemiologist collects and reviews preliminary data to determine if an outbreak has occurred, characterizes the outbreak, generates a hypothesis based on this information, and then tests the hypothesis through special studies. The CT DPH Epidemiology Program (EPI) fills this role in multi-jurisdictional (exposures and/or ill residents in multiple health jurisdictions) outbreaks as they have the capacity and expertise to rapidly and thoroughly conduct the epidemiological portion of the investigation. Local health departments that employ epidemiologists may wish to conduct the epidemiological investigation directly or in conjunction with the CT DPH EPI program. Local health directors may request epidemiological assistance from the CT DPH in outbreaks confined to their jurisdiction. Collaboration between local and state investigators is important for a rapid response, an effective investigation, and meaningful results. Collaboration is particularly important in the development and administration of the outbreak questionnaire.

General Steps of an Epidemiological Investigation:
The first step of the epidemiological investigation is to decide whether or not an outbreak has occurred. This is accomplished by recognizing time, place, and person associations that are related to increased cases of illness. If the increase in illness can be associated and traced to the ingestion of a common food or exposure at a common event or establishment, then a foodborne outbreak may be occurring. In order to determine if a specific food vehicle is associated with illness, it is important for the epidemiologist to have an accurate list of the foods available to the cases at the suspect meal (a copy of the list of foods prepared for the event or a menu from the suspected establishment).

Another initial step of the investigation includes verifying the diagnosis. This may be done by contacting health care providers or laboratories to obtain information about diagnoses or laboratory specimen results. If ill persons did not seek medical care or have specimens tested, then efforts are made to collect clinical specimens (usually stool samples) for testing at the CT DPH LAB. Reported symptoms and incubations will direct the appropriate tests.

Based on preliminary information collected, the epidemiologist develops a hypothesis. The hypothesis identifies the potential source of the outbreak (i.e. a common event, meal, food establishment, etc.) and possible causes of contamination (i.e. an ill food worker, cross-contamination, contaminated food product, etc.). A case definition is also developed that identifies the criteria for an individual to be included as a case. The hypothesis is most often tested through analytical studies that include interviews of both ill persons (cases) and comparable well persons (controls) to determine whether the “case group” is more likely to report eating a certain food item or report a certain exposure than the “control group.”

For an analytic study (i.e. cohort or case-control study), a food specific questionnaire is developed and administered to both the case and control group. Development of the questionnaire is dependent on the ability of the EHS to obtain detailed and complete information on available menu items served at the event, meal, or establishment under investigation as quickly as possible. If the information is incomplete (food items served are not included on the list, or are listed inaccurately), the statistical analysis may not yield meaningful or useable results.
A typical survey may include questions related to:

- Illness and symptoms
- Onset of symptoms (incubation period)
- Duration of symptoms
- Health care visit
- Foods eaten

Surveys may be conducted by telephone, electronically (e.g. Survey Monkey), by mail, or in person. The collected surveys are statistically analyzed (with EPI Info/SAS) to determine symptom frequencies, incubation periods, attack rates, odds ratios, or relative risks of specific food items based on a suspect meal. The results are intended to provide information about the implicated food item(s) as the vehicle(s) for transmission. The results will be used by the EHS to provide more detail and additional focus to the environmental investigation particularly with respect to specific food preparation practices.

Concurrently, laboratory and environmental personnel are conducting some aspects of their respective investigations and sharing findings with team members. As the investigation progresses, preliminary outbreak summaries are developed.

C. The Sanitarian/Environmental Health Specialist’s Role

The role of the sanitarian or environmental health specialist (EHS) has increased significantly in the last ten years. The importance in discovering the contributing factors (how the outbreak occurred) has been recognized as crucial to the reduction of future exposures and the development of public health practices that reduce the overall risk for foodborne disease. These environmental factors and their antecedents (why the contributing factor occurred), are the keys to understanding the underlying cause of the outbreak and implementing effective immediate and long-term controls. Since many contributing factors are behavioral factors, careful observation, interviewing, and assessment techniques are needed to determine the causes of the outbreak. Ongoing training in these areas is necessary for successful environmental outbreak investigations.

LHD staff (usually certified food inspectors) focus their efforts on conducting the onsite portion of the environmental investigation as they have direct knowledge of the establishment, and should the need arise, the regulatory authority to issue legal orders. The FPP provides guidance and technical assistance to the LHD and is responsible for conducting an environmental assessment utilizing the CDC National Voluntary Environmental Assessment Information System tool previously developed with the Environmental Health Specialist Network. On site assistance to the LHD will be provided as requested. (See section on Role of FPP below.)

a. Preparing for the investigation:
   Advance preparation is essential for a rapid response to an outbreak. Time lost from gathering required paperwork, materials, and equipment can negatively affect the outcome of the foodborne outbreak investigation. Before beginning an investigation the EHS should:

   1. Be sure the department’s emergency investigation kit is stocked. (See Appendix C)
2. Make copies of all forms that may be needed in the field. (See Appendix A and consult with the FPP for customized forms.)
3. Check for an adequate supply of stool kits (make sure they are not outdated), environmental sampling kits, and food sample containers.
4. Have phone numbers for essential contacts in the office and the field and a cell phone for communicating when out of the office.

When the LHD suspects or becomes aware that a possible foodborne illness outbreak may be occurring, the EPI and the FPP must be made aware of the situation. At this point cell phone numbers and email addresses should be shared for making contact after hours or while in the field. Once the appropriate agencies and departments have been notified and an investigation plan has been discussed with EPI and the FPP, the EHS initiates the environmental investigation.

b. Beginning the onsite investigation:

1. Visit the establishment and begin the onsite investigation.
2. Ask for the owner/operator and QFO and inform them that you are following up on complaints of illness that may be related to their food establishment.
3. **Gather a complete list of food items** if it is a common event exposure (e.g. a wedding or other gathering with defined attendees). If not, **obtain a copy of the menu and any specials** or other items that are not listed. For common events, be sure to include foods that may have been brought from outside the food establishment such as a dessert from a bakery, hors d’oeuvres that were homemade, etc. Include available drinks, water, ice, breads, etc.

c. Interviewing food establishment employees:

1. Use the *Kitchen Master List* form to compile a list of all employees. (Appendix A).
2. Include each worker’s telephone number, job title, and description of duties.
3. Identify foods prepared by each food worker. This is especially important if the outbreak may be due to a common event exposure. Be sure to obtain accurate information on the job duties. Many food establishment employees, although not designated as food workers, may actually handle food in various capacities depending on the needs of the establishment. For example, a dish washer or table busser may not consider themselves a food worker even if they are responsible for filling the bread baskets or filling the pitchers with ice. Likewise, the delivery person may only portion or wrap foods when there are large parties, or the manager may claim to only greet customers, but is often seen tasting foods or helping when business is busy. **Once the EHS obtains this information please FAX it to the FPP at (860) 509-8071.**

*Typically EPI will conduct all case interviews. Unless requested, the EHS should not conduct additional interviews of the case patients to avoid duplication of effort.*

4. Interview all food workers, managers, and other employees as needed, **privately and individually**. This is essential for obtaining accurate answers to the questions. Do not interrogate, but rather try to encourage disclosure of what actually happened. Document which foods they prepared, their symptoms (if any) and onset dates, and anything else they
may tell you about other food handlers. Specifically ask if they are currently or have experienced vomiting or diarrhea in the past four weeks (or other time frame as advised by DPH). Ask about specific symptoms instead of asking generally if a person was sick, as many will admit to experiencing diarrhea but may not consider themselves as ‘sick’ since they were able to go to work. (Asking food workers, food service directors, or managers if anyone was ‘out sick’ is not sufficient as it is well documented that food workers come to work while ill.)

While the initial goal is to interview and obtain stool specimens from all food establishment staff, there may be some instances where efforts will need to be focused on certain individuals or a subset of the staff. The priority list for interviewing and/or stool collection will be determined in consultation with EPI, the LHD epidemiologist (if applicable), and the FPP based on resources and the outbreak details.

5. Food workers should be asked about symptoms for the 4-week period before the onset of the first case and up to the time of the interview. Asking only about the last 72 hours is not enough since norovirus can be shed for at least 3 weeks and Salmonella can be shed for months. The Food Worker Interview form (Appendix A) is used for this task and should be faxed to the FPP at (860) 509-8071 once completed. The EHS should not wait until all interviews have been completed prior to faxing them to the FPP. Forms should be faxed as they are completed, at least on a daily basis.

6. If the EHS discovers during the interviews that workers have been ill or are currently experiencing symptoms, the EHS must document as a minimum, the following:
   - When did the symptoms start and stop?
   - Did the employee go home or continue to work while feeling ill and symptomatic?
   - Are any family members ill now or were they ill in the recent past?
   - Does the employee work in any other foodservice establishments, day care or health care facilities? (If the answer is yes, find out the name and address of the other establishment.)
   - What foods did the food worker prepare while ill?

These questions should be answered in detail on the Food Worker Interview form. Food workers who have gastrointestinal symptoms at the time of the interview will need to submit stool specimens for laboratory analysis and be excluded. These topics are discussed in more detail in the Obtaining Stool Specimens and Exclusion of Certain Food Workers sections of this document.

7. When interviewing, be careful not to appear threatening – be conscious of your tone and body language. Avoid showing disgust or surprise at the answers. Maintain a professional demeanor at all times. Avoid laughing or joking if possible. Try to put the interviewee at ease and phrase your questions carefully to avoid influencing their answers. Honest information is often obtained when staff does not feel intimidated. Of course if staff is uncooperative, a more direct approach may be needed; the director of health may need to order the owner to provide information or face closure. Training on successful interviewing techniques is highly encouraged and can help avoid these issues.
**Note:** Interviewing is an art and requires good listening skills, patience, as well as the ability to keep the interviewee on track. Inspector/interviewer bias is a major concern and can directly impact the outcome of the investigation. It may be difficult to stay objective and avoid making assumptions, but it is important. Avoid asking leading questions such as "You always take the food temperature of food on the steam table, right?" Do not assume that because inspection scores in the past have been high that the workers always follow proper food preparation practices.

Outbreak investigations can be stressful for the establishment’s employees. It is helpful to allay employees concerns by letting them know that:

- As the investigation progresses, you will probably be contacting them again with additional questions.
- You will be returning to the establishment as often as necessary until the investigation is completed to clarify or gather additional information.

After you have completed the interviews, it is often helpful to have another investigation team member review all of the interview forms to identify missing information and catch any ‘yes’ answers to symptom questions. On several occasions ill food workers have been identified by this secondary review.

d. Obtaining food worker stool specimens:

Collection of stool specimens is important for identifying the agent responsible for the foodborne illness. Ideally, the goal should be to collect stool specimens from all food workers. However, in certain circumstances specimens may need to be prioritized depending on resources, the specifics of the outbreak, and involvement of the food establishment worker. The literature has revealed that although food workers deny experiencing symptoms, some workers (especially with norovirus outbreaks) test positive for the agent. Reasons for denying symptoms include a lack of knowledge in recognizing symptoms and embarrassment about discussing their symptoms. Additionally, some individuals are asymptomatic (may be as high as 30% with norovirus). Sample collection will be determined by the EPI program in collaboration with the FPP.

In an effort to ensure viable specimens, and control the spread of the disease, the LHD should require that stool kits be returned by employees within 48 hours. In the majority of cases, employees will cooperate with the request for a specimen when a careful explanation of the test purpose has been provided by the investigator. However, in some instances, the Director of Health may have to issue an order requiring submission of stool specimens.

The EHS will supply the food workers with the appropriate stool kit(s). These kits are available from the regional epidemiologist and the FPP. Please be sure to **check the dates to ensure the FE vials have not expired!** The LAB generally has additional vials on hand that the LHD can obtain if they have collection kits, but need to change out the FE vial because it has expired. Consult with DPH to determine which tests should be run on the stool specimens. Generally, the FE vial is used for stool specimens, but some tests may require specific stool collection containers or transport conditions.
Sometimes, for a variety of reasons, it is difficult to obtain stool samples from workers. Therefore, every effort should be made to ensure that the proper procedures are followed so that submitted samples can be tested. Please be aware that the main reasons the LAB rejects samples are:

- Improper sampling procedures
- Labeling errors
- Leaking containers

When the stool kits are distributed to the food workers, it is important that the food workers understand:

- Which containers to use
- The amount of the sample that is to be collected
- The type of sample to be collected
- How to fill out the forms
- How to properly label the collection vial(s)

Please call the state laboratory Enterics section and/or the state FPP/EPI point of contact for your outbreak before delivering stool specimens to the laboratory. Depending on the testing required, special materials will have to be prepared. As soon as possible, inform the lab or DPH contact of the number of specimens to expect and when to expect them.

The laboratory cannot process samples collected in the wrong specimen containers, leaking specimen containers, or unlabeled, illegible or inconsistently labeled specimen containers. Labeling errors or missing information on the specimen submission form will delay testing and the release of official reports. To minimize delays, it is highly recommended the EHS fill out the submission form as much as possible before giving it to the food worker and label the specimen container with the food worker’s name. Make sure the name on the form matches the name on the specimen container. Please write legibly on both the form and specimen container and use permanent ink on the specimen container.

It is important to be thorough and specific when explaining to the food worker exactly what is required. They may be uncomfortable discussing the subject so care must be taken to ensure they understand the importance of submitting the sample and what is required. Review the submission form with the food worker and show them what information must be present. Make sure they are aware that they must write the date of collection on the specimen container as well as on the form. Time of collection is helpful but not required. Ask them to make sure the top on the container is secure but not overtight to prevent leaking. Due to federal requirements on human specimens, the lab requires the following information on the submission form for processing:

1. First and Last Name
2. Residential address including City and State
3. Date of Birth
4. Date of collection
5. Sample source (stool)
Laboratory personnel cannot legally make changes or corrections, or add data to specimen labels or submission forms. It is essential that the EHS check each container and form before handing them over to the lab. The EHS can make corrections and changes on the form or specimen. Once the specimen and form are relinquished to the lab, changes or updates can only be accomplished by submission of a new, fully completed requisition form in hard copy. This can be done in person or by faxing an updated form to the Enterics section at the lab. The laboratory will make every effort to process specimens with missing data; however official reports cannot be released until the data is received.

When picking up or before delivery of the samples to the state lab, check for the following:

1. The specimen is packaged correctly and not leaking.
2. The specimen is stool and not something else.
3. The specimen is in the correct container.
4. The container lid is secure but not overtight. (Gas production from stool will expand the container and pressure on the lid may cause it to leak fluid if the gas cannot escape.)
5. The sample container is labeled with the First and Last Name of the food worker and the Date of Collection.
6. The Name and Date of Collection on the specimen is identical to the Name and Date of Collection on the submission form.
7. The name on the label is legible as is the information on the form.
8. The form contains all of the required submitter information: First and Last Name, address including City and State, Date of Birth, Date of Collection and Sample Source (Stool).
9. The appropriate tests are indicated on the form. At least one test must be selected or the specimen cannot be tested.
10. The local health department's information is filled out in the authorized submitter section in the upper left corner of the form. This includes the locality name, the address, the Horizon profile number, the authorized contact name and phone number. If the submitter is unknown, the results cannot be released.

To assist in keeping track of who has submitted samples, make copies of the laboratory submission forms. Stool samples should be delivered to the LAB as soon as possible; it is not necessary to wait for all stool samples to be returned prior to submission.

Transport samples in coolers with ice packs. [Coolers and ice packs were provided with the emergency investigation kit.] The FPP may be able to provide assistance in transporting samples if needed. Please be sure to record and update specimen submission dates and test results for each food worker on the Stool Specimen Tracking Form (Appendix A). The form is very useful for keeping track of multiple food workers, their specimens, results, and dates. In an effort to avoid confusion, when a decision has been made to exclude certain workers from submitting stool samples or testing certain specimens, it should be noted on the tracking form. Share the information with the FPP by faxing the form to 860-509-8071.
Note: Please share confidential outbreak information such as food worker names, lab results, and the name of the implicated food establishment with EPI or the FPP, by phone or FAX. Do not use e-mail unless identifiers are removed. For example, the name of the establishment can be replaced with the CT outbreak number assigned by EPI at the beginning of the investigation.

e. Exclusion of certain food workers:
The decision to exclude certain food workers is dependent on many variables: See Appendix D for details – Guidelines for Excluding Infected Food Service Workers From Commercial Food Establishments. Exclusion means physical removal from the premises; the food worker is not allowed to return to work until cleared by the director of health after consultation with the FPP. A doctor’s note indicating clearance to return to work is not sufficient as many physicians are not familiar with the CDC recommendations and DPH protocol or the director of health’s authority to exclude food workers under Section 19-13-B42(r) of the Connecticut Public Health Code.

Experience has revealed that exclusion is preferable to restriction. Restricting the activities of symptomatic or positive food workers in the food establishment is unsuccessful as it sometimes results in contamination of food and/or food surfaces that increase the risk for additional illnesses.

The following scenarios illustrate conditions for exclusion:

1. Food Worker with Gastrointestinal Symptoms at Time of Interview
   If food workers are identified as having gastrointestinal symptoms at the time of the interview, the following must be done:
   a. Immediately exclude the symptomatic food worker(s) (by legal order of the director of health when necessary).
   b. Provide the necessary stool kit(s) to the symptomatic food worker(s) and require that they be returned within 48 hours.
   c. Identify food items prepared by the symptomatic food worker(s) and dispose of them as warranted.

2. Food Worker with Gastrointestinal Symptoms Between Interview and 4 Weeks Prior to Onset of First Case
   Please consult with the FPP if there are workers who indicate that they had gastrointestinal symptoms any time in the four weeks prior to the onset of the first case of illness. Determining if a worker should be excluded will depend on several factors which may include: an ongoing outbreak, the suspected or known etiological agent, and the time passed since the food worker’s symptoms ended. For example, if the agent is Salmonella, a worker has the potential to be infectious for a substantial length of time. As a result, the worker would need to be excluded until 2 negative stool samples taken at least 24 hours apart are obtained. These factors also determine if food handled by the worker that remains in the establishment needs to be destroyed.

3. Food Worker with Positive Stool Test
   Generally, food workers with positive lab results for the outbreak agent must be excluded from working. However, in some instances where significant time has elapsed between sample collection and the notification of a positive lab result, it may
not be necessary. For example, if a food worker’s stool specimen is positive for norovirus but it has been more than 72 hours after their symptoms stopped, they may not need to be excluded.

4. Asymptomatic Food Worker with Positive Stool Test
   Asymptomatic food workers with positive stool tests will need to be re-interviewed as soon as possible as they may be infectious. Once notified of the test results, some of those who tested positive may admit to having had symptoms when re-interviewed, while others will continue to deny symptoms. Food workers who are asymptomatic carriers that are shedding the organism may continue to do so for some time. Depending on the organism and other outbreak details, asymptomatic carriers may need to be excluded from working. Asymptomatic food workers who are positive for norovirus will need to be evaluated on a case-by-case basis.

Remember: It is important for the EHS to understand the difference between the 72-hour exclusion (after symptoms cease) of food workers based on symptoms and exclusion until a negative stool sample is obtained. The 72-hour exclusion applies when a food worker has had symptoms of undiagnosed vomiting and/or diarrhea or a food worker has vomiting or diarrhea and it has been determined that the agent causing the outbreak is norovirus. Exclusion of a food worker for 72 hours based on symptoms of undiagnosed vomiting and/or diarrhea always applies, regardless of whether or not an outbreak is occurring.

Other Considerations
   The LHD should also be sure that the excluded food worker is not employed in another food establishment. Before asking food workers about their symptoms or revealing positive stool test results when conducting food worker interviews, ask food workers about other employment. Once food workers are aware that they will be excluded, they may not be as forthcoming with information about other employment.

f. Developing food flows:
   Developing food flow diagrams of suspected or implicated foods is useful for understanding the sometimes complex food preparation procedures and what may have contributed to the outbreak. These are typically done when EPI has identified one or more food items of interest, has determined a “most likely” source, or if the pathogen suspected is typically associated with a certain food item available on the menu or a common practice within the food service establishment.

   When developing a food flow diagram, begin with suppliers and delivery of food ingredients. Show food flow from storage, to preparation, to service and if possible back to storage again. Quantities, pan sizes, the name of the food worker, and time should be included for each step. It is important to refrain from making assumptions about food preparation. The literature has demonstrated that extensive handling and preparation steps are often involved in a “simple menu item,” and procedures vary significantly from one food establishment to another. Do not assume the food item was made in the 'usual way' or as described by the manager or as written in a recipe book. It is critical to talk to the person(s) who actually prepared the food item as well as those workers who were nearby when the food item was being prepared. Preparation information from the manager or person in charge can be helpful in understanding policies and written procedures, but should not be relied upon exclusively.


g. Collecting food and environmental samples:
Generally, laboratory testing of food is done only for bacterial agents. With a few exceptions, there are no standardized approved procedures to test for norovirus or hepatitis A in food. Collect food, water, or environmental samples early in the investigation. Leftover foods may be consumed or discarded before the suspect food and/or agent is discovered so it is best to collect samples first and then consult with EPI and FPP to determine which foods will actually be tested.

If a bacterial agent is suspected, environmental swabs/samples should be collected immediately. Once an outbreak investigation begins, food establishment staff may clean equipment and other food contact surfaces more thoroughly than usual and reduce the chances for finding evidence of contamination. Please be aware that as the investigation develops, it may be determined that not all the environmental samples will need to be analyzed.

Follow the sample collection directions in Appendix C. Store samples in insulated coolers with ice or ice packs and deliver them to the DPH LAB immediately or as soon as possible for testing. Keep the food samples separate from stool samples. It is not necessary to wait until all food and/or environmental samples are collected before delivering to the DPH LAB. Call ahead to the FPP so that the LAB can prepare media in advance.

Food
Which foods should be sampled?
When a bacterial agent is suspected, food samples must be collected early in the investigation before they are consumed or discarded. This may be difficult as the suspect food is not often identified until the investigation progresses. In situations where a suspect meal has been identified, collect as many food items and ingredients as are available, including any leftover foods from ill individuals. When food from an event (such as a banquet) is not available, it may be necessary to collect a comparable sample of the item that was made after the event, or samples of the individual ingredients that were used to make the item.

Since standardized methods do not exist for detecting norovirus in food at this time, food samples should not be collected in outbreaks where norovirus is the suspected or confirmed pathogen. An exception is a norovirus outbreak where shellfish (clams, mussels, or oysters) are suspected as the vehicle. Shellfish samples can be tested for norovirus by special request from DPH at an FDA Laboratory.

Amount of food sample:
When testing food, it is important to collect a sufficient amount of sample so that the laboratory has enough to perform all of the necessary tests. The laboratory needs approximately 2 cups of each food item. However, if there are less than 2 cups available, collect whatever remains of the food item. As a general rule, collect more than is needed if possible. Food samples that are not analyzed can always be disposed of in the laboratory after the investigation is completed. When collecting large amounts of food from an establishment (e.g. 30 dozen eggs, the remains of a 40 lb. roasted pig, or 15 lbs. of ground beef, etc.), be sure to itemize what has been collected and leave a copy with the owner/operator/QFO. If a decision has not been made regarding which foods will be tested, it is important to let the food service establishment...
know that not all of the samples may be analyzed so that they are aware that they may not receive sample results for all the food items collected.

**Collection of Food Samples:**
Care should be taken to avoid contamination of samples. Contamination can occur from the collector or by cross-contamination from other samples. Scoops to transfer samples to containers are provided in the emergency kit or sterile gloves can be worn if handling large amounts of a food sample. Utensils that are stored in the food item to be sampled can also be used.

If the food to be sampled is a retail packaged item, the food should be left in its original container, or if previously removed, the container should be retrieved and submitted with the sample. In some situations it may be necessary to retrieve food samples and/or containers from the garbage for sampling. These samples may be requested when no other samples or only a small number of samples are available, a retail packaged food item is implicated, or a particularly virulent pathogen is involved.

The sterile bags or sterile cups provided in the emergency kit can be used to collect the food item, but foods may also be submitted in the original container, or containers commonly used for takeout. If sterile bags are not available, clean food containers may be used (plastic food bags such as ‘baggies’ or ‘Ziploc’ bags, plastic food containers, etc.). For food samples with high moisture content or liquids, use containers that can be sealed securely and store separately from other samples to prevent cross contamination should leakage occur.

If a large food item is to be sampled - such as a beef roast or tray of lasagna - collect the entire food item and let the laboratory determine how much and from what areas the sample is to be collected. The rationale for taking the whole item is that the pathogen may not be distributed evenly in the item, and the identification of the pathogen could be missed from a smaller sample. These samples may be left in the container or pan they are found in, but should be wrapped in foil and plastic to prevent spills and cross contamination.

**Transport of samples:**
Samples should be transported as soon as possible to the LAB. The *Food and Environmental Microbiology Sample Submission Form* MUST accompany all food samples being sent to the lab for testing (Appendix A). Be sure to fill out the form completely (including the Chain of Custody Record on the bottom) and affix the director of health's label to ensure the report is sent to the correct address. Consult with EPI and the FPP to determine which tests should be performed. Use insulated coolers with ice packs or clean containers/bags for foods that do not need refrigeration. Frozen foods must be kept frozen, but **do not** freeze foods that were not obtained frozen as this may stress the pathogen and make culturing and detection difficult.

*Spoilage organisms will not interfere with the analysis but freezing may render the pathogen undetectable even though it is present.*

If samples cannot be delivered to the laboratory immediately, they should be stored in a secured area (refrigerator, if required) where there is no possibility of contamination. A refrigerator at the health department can be used provided that other foods and items are stored separately and away from the samples. In some cases the health department may be
asked to hold samples until information needed to determine if sample analysis is warranted is obtained. Contact DPH for assistance in determining disposition of the samples.

Please see the collection procedures for gathering food samples in Appendix C and consult EPI, the FPP, or the LAB.

Environmental Samples
When a bacterial pathogen is suspected, it is important to collect environmental samples early in the investigation. Environmental samples often support the outbreak hypothesis and/or provide clues as to how the food or food contact surfaces became contaminated with the pathogen. Tests are typically run to identify the suspected pathogen(s) and/or indicator organisms that can provide information on the extent of contamination and possible modes of cross contamination.

Selecting sites for environmental testing is based on the suspected agent and what is known or suspected about the outbreak. Common sites for environmental sampling include:

- Cutting boards
- Food containers
- Utensils used with the suspect food
- Food prep sinks that were used to prepare the suspect food
- Dispensing units, including spouts/spigots
- Any surface that may have been in contact with the suspect food
- High use surfaces such as door knobs and refrigerator handles

Use the environmental swab packet provided in the emergency kit and follow the directions carefully to prevent sample contamination. Make a list of samples collected. It may be confusing to identify which areas are positive if many surfaces are swabbed, therefore, it is important to be explicit when labeling. If using numbers or letters to designate a site, include a drawing or floor plan that clearly identifies the actual sampling sites. Photographing the sample sites is also helpful. Before submitting the samples complete the Food and Environmental Microbiology Sample Submission Form, include the Horizon # for your LHD, and make a copy for your records.

**Note:** As a rule only food and environmental samples collected as part of an outbreak and authorized for testing by the FPP and/or EPI will be analyzed by the LAB. Exceptions must be approved by DPH prior to submission. Food that is dropped off at the lab without paperwork or that is not part of an outbreak investigation will not be tested. Complainants who call with requests to have food analyzed that they believe caused illness in an individual, and who are not part of an outbreak investigation can be referred to an approved private food laboratory.

**h. Implementing control measures:**
When it has been established that an outbreak is occurring in a food establishment, the local director of health must determine and implement immediate control measures to prevent the spread of disease and determine if the establishment can continue to operate. This is often a difficult decision, especially in the early stages of an investigation when all the information about the nature of the outbreak is not known. Factors to consider and continually assess include:
- Is the outbreak is ongoing? (Due to varying onset times, time for laboratory analysis and processing of test results, this is not always readily known.)
- Are there ill food workers?
- Are the illnesses severe or life threatening?
- Is there a high hospitalization rate?
- Are illnesses suspected to be caused by a food item that is no longer available in the establishment?
- Is the operator cooperative with the investigators?
- What is the quality of the information obtained from
- Are there control measures that can be implemented that will prevent continued exposure to the source of illness?

The quality of the information obtained must always be considered when deciding on control measures. If it is determined that closing the establishment is necessary to protect public health, it should be done by a written order of the local health director of health. A cooperative owner may offer to close voluntarily, but may become less willing due to economic considerations if closure goes beyond a day or two. The order must include the right to appeal and specify conditions for reopening as determined by the director of health.

In lieu of closure, other control measures should be implemented early on to limit any further spread of disease. Control measures may **include but are not limited to:**

- Interviewing food workers
- Exclusion of food workers who are currently experiencing or have recently experienced illness symptoms
- Requiring all food workers to submit stool specimens (may need to prioritize specific workers)
- The embargo or disposition of food items that are or may have become contaminated by ill food workers or other means.
- The requirement of an alternate, approved water supply if the water quality is deemed to be unsafe for human consumption
- Menu restrictions or modifications to only those foods that can be produced safely (only cook-serve menu items, no ready-to-eat items, only pre-packaged produce, etc.)
- Monitoring by the LHD or a qualified person to ensure safe practices and control measures are followed
- Specific training for food workers
- Additional equipment (such as hand washing sinks) or other physical improvements to the facility
- Requiring specific cleaning and sanitizing procedures for the establishment (i.e. during a norovirus outbreak, chlorine sanitizers may be required in higher concentrations than used for routine sanitization)
- Replacement of current food service workers with new workers who have not been exposed to the pathogen

Long-term controls may be warranted at the conclusion of an outbreak and may include but are not limited to:

- Food safety training
- Instituting new processes
- Establishment modification (repairs, new equipment such as food preparation sinks, hand wash sinks, refrigerators, etc.)
- More frequent inspections
- Written employee health policies

**Note:** The director of health must evaluate the food establishment continuously to determine if adequate controls are in place to prevent/limit the spread of disease, if new controls should be implemented, or if the facility should be closed. Conditions may change rapidly and at any stage of the investigation.

The owner/manager of the establishment most likely will be the individual who ensures the control measures are followed and complied with by all food workers. It is imperative that the manager is involved with, and aware of, the temporary control measures, including food worker exclusions. The EHS will need to monitor the establishment for assurance of compliance. If the controls are not being implemented as ordered, the Director of Health should consider closing the establishment.

### i. Determining contributing factors:

The environmental investigation (environmental assessment) is conducted to help determine the contributing factors that allowed the transmission of disease – specifically how the food became contaminated, what conditions allowed the organism to grow (if bacterial), and how the agent survived. A systematic evaluation by the EHS that includes the following steps should identify these contributing factors in addition to the environmental antecedents:

- Conduct a detailed food prep review of the food item(s) found to be or suspected of being the vehicle for the agent.
- Assess the personal hygiene of food workers.
- Evaluate the availability and accessibility of hand washing facilities.
- Evaluate bare hand contact, glove use, hand washing practices.
- Evaluate sanitation of food equipment and the overall facility.
- Verify water quality and approved sources of food and water.
- Check for any cross-connections in the establishment or potential back flow situations.
- Evaluate equipment for storing, holding, cooking, and cooling foods (refrigeration, steam tables, thermometers, etc.). Is the equipment adequate for managing the volume of food prepared?
- Evaluate the potential for contamination and cross contamination – storage of potentially hazardous foods, preparation practices, cleaning and sanitizing procedures, washing of produce, and vermin control.
- Evaluate temperature control during receiving, storage, preparation, cooking, cooling, hot holding, reheating, and transporting.
- Evaluate the food service establishment’s ill food worker policies:
  - Does management ask workers about symptoms when staff are absent from work?
  - Does the establishment report ill food workers to the LHD?
  - Do they know the exclusion requirements for undiagnosed diarrhea or vomiting?
  - Do they have the ill food worker posters displayed?

Once the contributing factors are known, an attempt should be made to determine the antecedents. Antecedents answer the ‘why’ questions related to the contributing factors. For
example, if it is determined that chicken was not cooked to 165°F. as required, possible antecedents may include a lack of equipment (thermometer), or a lack of knowledge (the chef was not aware of the minimum safe cooking temperature), etc.

**D. The Food Protection Program’s Role**

In addition to providing technical guidance to local health departments, the FPP will conduct an environmental assessment at the implicated food establishment utilizing the CDC’s National Voluntary Environmental Assessment Information System (NVEAIS) tool originally developed by the Environmental Health Specialists Network. Local health departments that have been trained on the system can assist in data collection.

The purpose of NVEAIS is to collect environmental data in a systematic, standardized way for entry into a national database. The collected data can then be analyzed to better characterize food establishments that have outbreaks by identifying contributing factors and antecedents. The FPP will oversee data collection and data entry for quality control purposes and continue to train interested sanitarians on the tool’s use. Local sanitarians will be informed of the assessment site visit and are always invited to accompany the FPP. The NVEAIS assessment is conducted in conjunction with the local EHS’s environmental investigation. The information the EHS collects is essential to the overall assessment since, as first responders, local investigators will have observed conditions and procedures that are more representative of actual conditions during the outbreak than what is observed a few days after an investigation is underway. Information and recommendations will be shared with the LHD.

Upon request from the LHD, the FPP can also provide onsite assistance with:
- Conducting food worker interviews
- Delivering of stool collection kits and food and environmental sample containers to the LHD and/or the LAB.
- Reviewing food worker health policies
- Providing information and training to food workers

**E. The Laboratory’s Role**

The role of the DPH laboratory staff in a foodborne disease outbreak investigation is to identify the specific pathogen or pathogens that are responsible for illness. Laboratory identification of the suspected pathogen from stool specimens, suspect foods, and environmental surfaces that confirm the hypothesis, provide confirmation of the etiologic agent causing the outbreak. The DPH laboratory receives isolates from hospital and private laboratories of specific reportable pathogens and conducts tests to confirm identification of the agent. More specific tests such as speciation, serotyping, molecular subtyping, etc. are conducted depending on the organism. Samples may be sent out to federal laboratories for further testing if necessary.

Stool, food, and environmental samples are analyzed depending on the findings of the outbreak investigation. It is important that the laboratory be notified in advance for these types of samples so that adequate quantities of the proper media can be prepared. Results are reported to the local director of health that submitted the samples as indicated by the Horizon # entered on the sample submission forms. The DPH laboratory also notifies EPI and the
FPP, discusses any concerns or unusual findings, and may make recommendations for additional testing or sampling.

_It is extremely important that the clinical, food, and environmental samples are collected and submitted early in the investigation to improve the chance that an etiologic agent will be identified._

**F. Communicating with Team Members**

Throughout the outbreak investigation, expect ongoing contact with DPH EPI and FPP who will request updates from the LHD on the progress of the environmental investigation. DPH will provide updates on the progress of the overall investigation. Although it may appear disruptive and time consuming, it is important to communicate regularly, as new information often changes the focus or direction of the environmental investigation. This may include several calls per day and/or conference calls. Please be aware that although a team leader may be assigned to each outbreak investigation, limited resources, varying schedules, and other assigned duties often preclude a single point-of-contact. To avoid delays and provide continuity throughout the investigation, it is important that investigators be provided with contact information for other staff who will respond in the team leader’s absence.

**G. Confidentiality of Data**

All information obtained while investigating an outbreak or a potential outbreak must be considered confidential and cannot be released to the media, general public or anyone else without prior DPH approval.

Conn. Gen. Stat. §19a-25 and the corresponding regulations at Conn. Agencies Regs. §§ 19a-25-1 through 19a-25-4 (see Appendix B) (collectively the “confidentiality laws”) govern the disclosure of information that is obtained during an outbreak investigation. Investigators must be familiar with these confidentiality laws.

In general, the confidentiality laws state that “identifiable health data” that is collected as part of a study of morbidity and mortality or to reduce morbidity and mortality, such as an outbreak investigation, shall not be disclosed except as deemed necessary by DPH.

“Identifiable health data” is “any item, collection, or grouping of health data that makes the individual or organization supplying it, or described in it, identifiable.” Conn. Agencies Regs. § 19a-25-1(7). Thus, information that cannot be disclosed includes the names of the implicated food establishment and everyone else associated with an outbreak.

Significantly, disclosure is prohibited even if the media is reporting information that was provided by the implicated establishment, its employees or patrons, or any other source.

DPH periodically releases outbreak investigation summaries that do not contain identifiable health data in the Connecticut Epidemiologist, which is a newsletter that is available on the DPH website.
In addition, specific information may be released after consultation with DPH if DPH deems it necessary to do so. For example, if two foodworkers have tested positive for *Salmonella Typhimurium*, the manager or operator of the food establishment where the employees work must be informed of the results so he or she can prohibit the employees from working where they can further spread the disease.

Local health departments have the authority to obtain any and all information necessary to conduct the investigation from the implicated establishment, medical personnel, hospitals, laboratories, other agencies, etc. (See Authority to Obtain Information During an Outbreak, Attorney General Opinion, Appendix B). All of this information is covered by the confidentiality laws and must not be released or shared except as permitted under the confidentiality laws.

Under the confidentiality laws, confidential information can be provided to the investigators, other local health departments, and other agencies involved in the investigation (i.e., EPI, LAB, FPP, FDA, USDA, other state health departments, etc.) if DPH deems it necessary to do so to reduce morbidity and mortality associated with the outbreak.

Finally, note that even when disclosure of confidential information is permitted, every effort must be made to limit the disclosure of identifiable health data to the minimum amount that is necessary to accomplish the public health purpose.

**H. Special Procedures for Person-to-Person Outbreaks in Institutional settings such as Hospitals, Long-term Care Facilities, and Assisted-Living Facilities**

Gastrointestinal outbreaks in institutional settings are most often caused by norovirus$^{3, 5}$. Gastrointestinal illness is typically spread person-to-person among residents and staff including food workers. If food workers or other dietary staff work while ill, there is a possibility that the disease can become foodborne and cause further illness. This is especially true with norovirus outbreaks due to its low infectious dose and the ease of transfer of the virus between people and surfaces. Therefore, the primary objective of the environmental investigation in this setting is to prevent the outbreak from becoming foodborne. Because most institutions serve a high-risk population (elderly and immunocompromised), it is important that the EHS evaluate policies and procedures and implement controls to reduce the risk of foodborne transmission. The procedures for this type of outbreak investigation may be more abbreviated than those previously described for a foodborne outbreak and may vary greatly depending on the facility and nature of the illness.

Most institutions are required to report outbreaks to the LHD and DPH (EPI and the DPH Facility Licensing and Investigation Section). If food workers or other dietary/foodservice staff are among the ill, the LHD will need to visit the food service facility to determine if adequate procedures and policies are in place to reduce the risk that the person-to-person outbreak will become foodborne.

As part of the institutional assessment, the EHS should:

- Interview all kitchen workers individually and in private, utilizing an abbreviated food worker interview form – the *LTCF Food Worker Interview Form (Person to Person Outbreak)* in Appendix A. Interviews should include all kitchen workers as well as any dietary aides, dietary managers, QFO personnel, and dining room attendants.
1. Ask each if they have had symptoms of vomiting and/or diarrhea at any time between the interview and 4 weeks (or other time frame as determined by DPH) before the date of onset for the first case. The first case may have been a patient, a staff member, or a food worker. The Infection Preventionist will be able to tell you when the first case was reported.

2. Stool sampling of ill/all food workers is not recommended unless there is a compelling reason to do so (e.g. if a bacterial pathogen such as *Salmonella* has been identified in a resident; if there is a sudden onset of cases of GI illness in residents indicating that food may be the cause of illness; if food workers exhibit symptoms inconsistent with norovirus infection, etc.) It is important to discuss with the FPP whether it is necessary to collect specimens and if the DPH LAB will be conducting testing when food worker samples are collected.

3. Require all symptomatic food workers to be excluded for the recommended 72-hour exclusion period, after symptoms have subsided.
   a. The food worker can be permitted to return to work provided that they have been symptom-free for 72 hours. (If a specific pathogen has been identified, follow the exclusion recommendations specific for that pathogen.)

Review the sick policy for food workers with the food service director and the infection preventionist.
   1. Remind the infection preventionist that ill food workers must be reported to the local director of health and that kitchen workers must remain out of work for 72 hours after symptoms of undiagnosed vomiting and/or diarrhea have subsided.
   2. Check to see if the facility has posters and brochures from the FPP’s Ill Food Worker Campaign. If not, this is an opportune time to provide them and discuss how ill food workers can cause foodborne outbreaks.

Dispose of any foods that ill food worker(s) prepared or handled. This is especially important for ready-to-eat foods.

Evaluate the number, location, and accessibility of hand washing facilities in the required areas i.e. where food is prepared and dispensed, in the dishwasher area, and in toilet rooms. If sinks are lacking or not easily accessible, the director of health should require them as part of the immediate or long-term control measures. Actively evaluate hand washing practices and glove use by food workers through observation.

Evaluate the dish washing machine for proper function.
   1. Is it sanitizing properly?
   2. If the machine uses chemicals for sanitizing, is it discharging the correct concentration of sanitizer? Do they have an adequate supply of the sanitizing chemical?
   3. Do they need to switch the sanitizing agent of the machine? See NOTE below
   4. If the machine uses hot water for sanitizing, does it always reach the proper sanitizing temperature?

Evaluate manual sanitizing procedures.
   1. Is there an adequate supply of an approved sanitizer?
   2. Does staff know how to make up the sanitizing solution to the correct concentration?
   3. Does staff have appropriate test strips to check the concentration?
   4. Is sodium hypochlorite (chlorine bleach) used to disinfect environmental surfaces? (CDC recommends 1000 – 5000 ppm, with the upper limit for use on feces or vomit contaminated surfaces.)
NOTE: Only certain quaternary ammonia based sanitizers are effective in destroying norovirus. The Environmental Protection Agency maintains a list of those that are effective but the FPP still advises establishments switch to a chlorine-based sanitizer for use on food contact surfaces when a norovirus outbreak is suspected. A properly functioning hot water sanitizing dish machine is effective against norovirus.

- Evaluate if control measures need to be implemented within the facility. This will depend on the nature and scope of the outbreak as well as common facility practices. Examples of control measures include but are not limited to,
  1. The use of disposable single service dishware and eating utensils
  2. Mandatory glove use
  3. Double hand washing
  4. Restricting the menu to cook and serve items (no ready-to-eat foods)
  5. Temporary suspension of use of common dining areas
  6. Have food prepared by another facility

These procedures are intended to be used for the common person-to-person type outbreaks in long-term care facilities. If there is evidence that the outbreak is foodborne, follow the more extensive procedures for a foodborne outbreak as previously described.
IV. ACTS OF INTENTIONAL CONTAMINATION

The EHS needs to be aware that intentional acts of contamination or tampering of food products are always a possibility when considering the source of a foodborne outbreak. Although this scenario is rare, it happens. The EHS should keep the thought of intentional acts of contamination or tampering as a possibility in mind and remain alert for anything that stands out as unusual during the investigation or raises a “red flag.”

When intentional contamination is suspected, it is imperative that law enforcement be contacted immediately. In these situations, law enforcement becomes the lead agency in the investigation. During the investigation, the EHS may be employed for onsite assessment of the establishment, conducting interviews, and sampling. However, once an outbreak has been determined to have been caused by an intentional act of contamination or tampering, all activities related to the investigation must first be cleared through the lead law enforcement agency. This includes any onsite visits to the establishment, interviewing personnel, obtaining samples for laboratory analysis, etc.

Samples collected during these types of investigations are considered evidence and must have a chain of custody form completed before submission to the LAB. The purpose of the chain of custody form is to account for the handling of the sample.

During an initial outbreak investigation, investigators might not be aware that the outbreak is due to intentional contamination. The local law enforcement agency must be contacted immediately once intentional contamination is suspected. Do not contact the State Police (unless State Police have jurisdiction for the town). The local law enforcement agency will follow the chain of command already in place for law enforcement procedures. The FPP should also be contacted.

Note: It has been requested that the Connecticut Federal Bureau of Investigations WMD Coordinator be contacted if an outbreak is suspected to be an intentional tampering or contamination event. The FBI WMD Coordinator can be contacted at the New Haven FBI office at (203) 777-6311.
V. THE FINAL REPORT AND HOT WASHES

The FPP will request a final report from the local investigators. When the foodborne illness outbreak investigation is complete, the EHS should prepare a detailed account of the environmental investigation including contributing factors, antecedents and control measures implemented for inclusion in the final report. It is important that the EHS include all documentation and a synopsis. The report must be accurate in terms of the event, the investigative process undertaken by the EHS, actions that may have resulted from findings during the investigation and the conclusive end result of the outbreak.

The final report is useful as an educational tool for other inspectors and agencies. It can showcase the need for additional education in industry, identify ways to improve the investigative process, or be used as a tool in performing needs assessment such as new regulations or training opportunities.

The final report should include:

1. **Details** on how the outbreak was first reported (individual complaint, large gathering of people affected, multi-state, etc.), who made the initial complaint, who received the complaint, dates and times of complaint, and to whom the complaint was referred.

2. **Background information** on the establishment, including all demographic information, type of establishment, operation details, menu, number of employees and their job duties, and the types of foods located within the establishment.

3. **Methodology** used to conduct the environmental investigation. This includes all aspects of the onsite investigation, interview data, food flow diagrams, the process used to obtain any clinical, environmental, or food samples, and any temporary control measures that were implemented.

4. **Epidemiological and environmental results** obtained from the investigation. This includes the status of the establishment (is it open, closed, etc.), what was discovered during the onsite investigation that may have contributed to the outbreak (unclean facility, improper cooking processes, poor hygiene of employees that led to outbreak, etc.), results from any recalls or trace backs conducted, if any other agencies became notified or involved with the outbreak, and any changes that may have occurred within the industry or agencies based on outbreak data.

5. Recommendations for long term controls and conclusions regarding why the outbreak occurred (contributing factors and antecedents) should be included to illustrate risk reduction methods that can be implemented.

6. Include hard copies of investigation reports, interview questionnaires, menus from the establishment, copies of any legal notices (closure orders), and other related documentation unless they have already been provided to the FPP.

7. Once completed, send the final report to the FPP as soon as possible.

EPI will prepare their final report with input from the other investigators. Some reports may be published (with identifiers removed) in the *Connecticut Epidemiologist* newsletter. The LHD report is not expected to contain all information from all aspects of the investigation, but rather should provide an overview of the outbreak with a detailed focus on their investigation. In some instances the FPP will send a draft report with specific areas to be completed by the LHDs.

In some cases it may be helpful to have a debriefing (after action report meeting or hot wash) where those involved with the investigation can meet to review the results of the investigation and discuss what went right and what might have been done differently. These are usually requested when certain
aspects of the investigation occurred that are not typical of most investigations, such as uncommon pathogen etiology, unique hindrances experienced during the investigation, or even experiences with the public and media that can be turned into learning experiences. Such discussions can help improve future investigations.
References


4. Connecticut Ill Food Worker Educational Campaign. CT Department of Public Health Environmental Health Section Circular Letter 2009-48

Appendix A: FORMS

1) Intake Forms
   i) Foodborne Alert Complaint Form
   ii) Foodworker Interview Form
   iii) LTCF Foodworker Interview Form (Person to Person Outbreak)
   iv) Perpetual Calendar

2) Investigation Tracking Forms
   i) Master List of Food Establishment Staff
   ii) Food Prep Review
   iii) Stool Specimen Tracking Form
   iv) Food Specimen Tracking Form

3) Lab Submittal Forms
   i) Stool Sample Form
   ii) Food/Environmental Sample Form
**Foodborne Alert Complaint Form**

**Connecticut Department of Public Health**

**Food Protection Program**

Fax to DPH FPP at: 860-509-8071 within 24 hours

**Complaint Summary:**

---

**Ill Person:**

- **Name:**
- **Street Address:**
- **City/Town:**
- **State:**
- **Zip:**
- **Home Phone:**
- **Work Phone:**
- **Sex:**
- **DOB:**
- **Age:**
- **Race:**
- **Other:**
- **Occupation:**
- **City/Town:**
- **Works in:**
- **If FSE:**
- **Name:**
- **City/Town:**
- **Volunteer Food Worker:**
- **Date/Time Consumed:**
- **Location:**

**Suspect Food(s):**

---

**Data Entry Date:**

**Date Reported to FPP:**

**Source of Complaint:**

**Phone #:**

**Address:**

**Relationship to ill:**

---

**Date Complaint Received:**

**Time Received:**

**Received by:**

**Phone #:**

**Local HD:**

**Other Agency:**

---

**Symptoms:**

- **Onset Date**
- **Time**
- **Diarrhea:**
  - □ Watery
  - □ Mucus
  - □ Bloody
  - # Episodes in 24 hours
  - ___ Vomiting
  - ___ Metallic Taste
  - ___ Nausea
  - ___ Tingling/Burning Mouth
  - ___ Abdominal Pain
  - ___ Fever ___°F
  - ___ Blurred/Double Vision
  - ___ Headache
  - ___ Dizziness
  - ___ Jaundice
  - ___ Numbness
  - ___ Muscle Pain
  - ___ Rash/Flushed
  - ___ Achy
  - ___ Swelling
  - ___ Retching
  - ___ Itching
  - ___ Prostration

**Other Symptoms:**

---

**Duration:**

---

**Suspect Food(s):**

---

**Food Purchased at:**

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Rev. 3/12/2015

*CONFIDENTIAL DOCUMENT*
### Other Clinical Data

<table>
<thead>
<tr>
<th>Health Care Visit</th>
<th>Hospital Visit</th>
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<tr>
<td>Yes ☐ No ☐</td>
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Name of Health Care Provider and/or Hospital  
Town  
Date Admitted: ____________  Date Released: ____________  
Diagnosis: ________________  Treatment: ________________  
Clinical Specimens:  ☐ Fecal  ☐ Blood  ☐ Urine  
☐ Vomitus  ☐ other ____________  
Antibiotics Taken?  Yes ☐ No ☐ ________________________  
Date Collected:  ________________________  
Collected By:  Physician ☐  Ill Person Through Local HD ☐  
Hospital ☐  Unknown ☐  
☐ Other ☐  
Lab Results:  ______________________________________  
Death:  Yes ☐ No ☐  

### Additional Environmental Data

<table>
<thead>
<tr>
<th>Environmental Samples:</th>
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<tr>
<td>Complaint Food Sample ☐</td>
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Lab Results:  ______________________________________  

### Other Possible Exposures

Seven (7) days before illness did you have exposure to the following?  
Indicate Date and Place if applicable:

<table>
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<tr>
<th>Y</th>
<th>N</th>
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Out of state travel  ________________________________  
Out-of country travel  ________________________________  
Ill people/household members  ________________________________  
Diapered kids/adults at home  ________________________________  
Children attend day care  ________________________________  
Visit nursing home  ________________________________  
Handle Livestock/poultry  ________________________________  
Reptiles (snakes, lizards, turtles)  ________________________________  
Visit pet store  ________________________________  
Contact with birds  ________________________________  
Ill Pets  ________________________________  
Visit farm with animals  ________________________________  
Animal carcasses or excreta  ________________________________  
Petting zoo  ________________________________  
Recreational waters  ________________________________  
Camping/Hiking  ________________________________  
Occupation contact w/ human excreta  ________________________________  
Attend large gathering (party, fair, etc.)  # people:  ______

Other:  __________________________________________________  

### Sewage Disposal:

| Private Septic System ☐  | City Sewer ☐  | Unknown ☐  |

Other:  __________________________________________________  

---

Rev. 3/12/2015

THIS FORM TO BE COMPLETED BY A PUBLIC HEALTH OFFICIAL  
CONFIDENTIAL DOCUMENT
<table>
<thead>
<tr>
<th>Meal</th>
<th>Date/Time</th>
<th>Place prepared</th>
<th>Place eaten</th>
<th>To go: Time consumed</th>
<th>Items consumed / Qty</th>
<th>Snacks/Other</th>
<th>Qty Eaten</th>
<th>Notes</th>
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<td>Dinner</td>
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Companions who ate same meal - Name/ Phone/ Meal:

- WELL
- ILL

Day of Illness:

Day Before Illness:

Two Days Before Illness:

Suspect Place:

Type: Full Serve  Fast Food  Retail/ Grocery
Ethnic  Home  Temporary  Institution  Mobile

Suspect Foods

Confidential Document

THIS FORM TO BE COMPLETED BY A PUBLIC HEALTH OFFICIAL
Rev. 3/12/2015
FOOD WORKER INTERVIEW FORM

Establishment: ____________________________

Date(s) of suspect event (date of first onset) or date suspect meals eaten: ______________________

Name: ________________________________
Title: _________________________________
Address: ______________________________
City/ State: ____________________________
Phone: ________________________________

Interview date: ________________________
Interview conducted by: __________________

How long have you worked here? ____________________
Are you a food worker anywhere else? N Y
If yes Where: ____________________________

WORK HISTORY

Time frame of risk – approximately 4 weeks prior to the date of the event, suspect meal, or date of first onset of illness in case up to the present day. Time Period of risk: ________________________

1. Indicate days NOT worked during the time frame of risk:
   Regular day(s) off. Dates: _______________________
   Vacation day(s). Dates: _______________________ 
   Sick day(s). Dates: ____________________________

2. Did you work the day of the suspect event/meal? Y N
   If yes, what hours ______________

3. Did you work the day before the suspect event/meal? Y N
   If yes, what hours ____________________

4. Did you handle/prepare any of the foods served? (see list) Y N
   If yes, which foods ______________________________

5. Were any of these prepared 6 hours or more in advance of the event/meal? Y N
   If yes, which foods_____________________________________________________________

6. Did you eat any foods served on date of event or suspect meal date: Y N
   If Yes Indicate foods eaten: _____________________________________________________

ILLNESS HISTORY

1. Have you or anyone in your household had any of the following symptoms during the time period of risk?

<table>
<thead>
<tr>
<th>Foodworker</th>
<th>Household members</th>
</tr>
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<tbody>
<tr>
<td>Loose Stool: Y N</td>
<td>Loose Stool: Y N</td>
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<td>Diarrhea: Y N</td>
<td>Diarrhea: Y N</td>
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<td>Vomiting: Y N</td>
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<tr>
<td>Fever: Y N Temp?</td>
<td>Fever: Y N Temp?</td>
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</table>

If ill with any of the above symptoms obtain the following:

<table>
<thead>
<tr>
<th>Foodworker</th>
<th>Household members</th>
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<tr>
<td>When did symptoms first start?</td>
<td>When did symptoms first start?</td>
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<tr>
<td>When did symptoms end?</td>
<td>When did symptoms end?</td>
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<tr>
<td>When did you return to work after being ill?</td>
<td>Occupation:</td>
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<td>Did you go to the doctor or hospital? Y N</td>
<td>If household member is a food worker-Place of employment:</td>
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<td>If yes indicate health care provider:</td>
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   Diagnosis/Treatment:

2. Are you required to tell your employer when you are sick with diarrhea or vomiting? Y N
3. What happens if to tell your employer when you are sick with diarrhea or vomiting? ______________________
4. Do you receive sick leave pay? Y N
5. Is FPP Ill Food Worker Poster posted? Y N If no, provided poster and review with QFO. Y N

STOOL SPECIMEN

Was the food worker provided with a stool kit: Y N Date kit(s) distributed: ________
• Instruct worker that submission of stool must be within 48 hours or the worker can be excluded from work

Rev 3/12/2015
Circle Dates Worked

Name: ____________________________  Interview date: __________
Title: ____________________________  Interview conducted by: __________

Time Period of risk: 4 weeks before first case reported through date of interview.

Time period in question will vary – approximately 4 weeks prior to the onset of illness (1st case), through the present day.

ILLNESS HISTORY

1. Have you had any of the following symptoms between __________ & present?

   Loose Stool: N  Y
   Diarrhea: N  Y
   Vomiting: N  Y
   Fever: N  Y ... if yes Temp? _______

   If no, skip to question 3.

2. If ill with any of the above symptoms obtain the following:

   When did the symptoms first start? Date and time: ________________________________
   When did the symptoms end? Date and time: ________________________________
   Did you seek medical attention? N  Y  If yes, indicate health care provider: _________________
   Were any clinical samples taken? N  Y  Diagnosis/Treatment: ___________________________

3. Has anyone in your household been ill, (4 weeks prior to onset through the present) with any of the following symptoms?

   Loose Stool: N  Y
   Diarrhea: N  Y
   Vomiting: N  Y
   Fever: N  Y ... if yes Temp? _______

   If yes ... when did symptoms start? _____________  When did symptoms end? _____________
   Are they a food worker anywhere else? N  Y  If yes, where: ___________________________

   If yes, contact the DPH Food Protection Program at 860-509-7297

WORK HISTORY

1. Days worked while ill or after illness: _______________________________________________

2. Food prepared during the time frame of risk: _________________________________________

3. Do you receive sick leave pay? N  Y

4. Are you required to tell your employer when you are sick with diarrhea or vomiting? N  Y

STOOL SAMPLE

Was the food worker provided with stool kits? Indicate: FE Kit  Date kit(s) distributed: ___________

- Instruct worker that Submission of stool must be within 48 hours or the worker can be excluded from work
- Name must be on specimen vial and paperwork inside kit must be complete and accurate.
- Are the FPP ILL Foodworker Posters posted in the establishment? N  Y

[If no, provide and discuss with QFO]
A perpetual calendar is a calendar that shows the days of the month without designating the month. This way the calendar can be used for any month. Each month starts on a different day of the week so choose the calendar that starts with the corresponding day of the week.

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Master List of Establishment Staff

Include:
Waitstaff, dishwashers, food preparation workers, cooks, bartenders, bussers, QFO/Supervisor, Owner/Manager, host/hostess, delivery/transport personnel, bakers, or any other staff.

Include all those who worked between: __________________________
Number of employees on-site date of event/suspect meal: ______________
Manager in charge of the facility the date of the event/suspect meal: __________
Person in charge of the kitchen the date of event/suspect meal: __________
Who is the Qualified Food Operator? _______________________________________

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<th>Name</th>
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</table>
**Food Preparation Review**  ◆  **Food Product:**

Date Food Eaten: __________________________________________

Food Sample Collected: □N □Y . . . List items: __________________________________________

Lab Results:

**Interview with:** __________________________ Title ___________________ Role with product in question: __________________________

Person(s) who prepared the item:

Date(s) Food Prepared: ___________ Time Food Prepared: ___________ Quantity prepared __________________________

**Ingredients:**

**Supplier(s):**

**Distributor(s):**

Was there a change in supplier for this item? __________________________

**Steps Involved in Process** – Examine: Receiving ➔ Serving - Product formulation, step by step preparation, recipe for item; storage and handling of item before being prepared; thawing, cooking; **cooling, re-heating, holding temps**, cross contamination, storage when and where; glove use; use of thermometers; location of hand wash sinks; training in food safety; temperature logs on-site; employee hygiene, equipment cleaning procedures how and where; environmental hygiene. **Who did what, when and where for each step of the process.**

**Contributing Factors Identified:**

___________________________________________________________________________________________________________________________________

**Control Measures:**

___________________________________________________________________________________________________________________________________

Rev. 3/18/15
Food Worker Stool Specimen Tracking Form

Stool specimens should be returned within 48 hours after being distributed to food workers. Failure to return specimens within the requested timeframe may result in the food worker being excluded from further work, by the Local Director of Health, until a specimen is provided.

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Title</th>
<th>Collection Date of sample</th>
<th>Date kit distributed</th>
<th>Date kit returned</th>
<th>Enteric Culture test result</th>
<th>Norovirus test result</th>
<th>Notes:</th>
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Be sure to contact the FPP or EPI before distributing stool kits. Communication between the LHD, LAB, FPP, and EPI must occur before the LAB will accept any specimens from a LHD.
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Rev. 3/12/2015

A20
**Food Specimen Tracking Form**

Before submitting to the lab: Specimen vials must have a name on them, lab paperwork inside kit must be complete with Your Account Label, Food Information, and Specimen Information must be complete. Be sure to check the type of testing service requested, for example: Bacteriology: 201M (stool culture) is a test for *Salmonella, Shigella, Campylobacter and E coli* 0157. The State Lab will not be able to process specimens if paperwork is not complete. Inform the lab that specimens will be coming in and the approximate number of submissions. Charlie Wells at the State Lab can be contacted with questions regarding specimen submission (860) 509-8570.

<table>
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<th>Sample Description</th>
<th>Date consumed</th>
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<th>Suspected agent</th>
<th>Lab test result</th>
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<td>Sample Description</td>
<td>Date consumed</td>
<td>Date collected</td>
<td>Suspected agent</td>
<td>Lab test result</td>
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</table>
## Section 1: Patient Information

**Name (Last, First, M.I.) or Identifier:**

**Street Address:**

**Date of Birth:**

**Gender:**
- Female
- Male
- Unknown

**Home Phone:**

**Race (check all that apply):**
- White
- Black/African Amer.
- Asian
- Amer. Indian/Alaska Nat.
- Nat. Hawaiian/Other Pacific Islander
- Other
- Unknown

**Ethnicity (check all that apply):**
- Hispanic
- Non-Hispanic
- Unknown

**International travel within the past 21 days?**
- Yes
- No
- Unknown

**Location(s):**

**Ordering Healthcare Provider:**

**Phone:**

## Section 2: Specimen Information

**Submitter Sample ID:**

**Date Collected:**

**Time Collected:**
- AM
- PM

**Specimen Source/Type:**
- Blood
- Bronchial Wash
- Cervix
- CSF
- Lymph Node
- Nasopharynx
- Oral Fluid
- Rectal
- Serum
- Sputum
- Stool
- Throat
- Urethra
- Urine

**Body Fluid, specify ______________________**

**Tissue, specify ______________________**

## Section 3: Select Testing Requested

### Bacteriology

- AFB Clinical Specimen (Mycobacteria Smear & Culture)
- AFB Referred Culture (Mycobacteria for Identification)
- Bioterrorism Agent Identification
- Bordetella pertussis (DFA, Culture, or Isolate)
- Chlamydia & Gonorrhea DNA Probe
- EIP Isolates for Identification (Check one)
  - Group A Streptococcus
  - H. influenzae
  - L. monocytogenes
  - N. meningitidis
  - S. pneumoniae
  - Other: ______________________
- Enteric Isolate or Culture (Check one)
  - Campylobacter
  - E. coli O157
  - Salmonella
  - Shigella
  - Shiga-toxin producing E. coli
  - Vibrio
  - Other: ______________________
- Neisseria gonorrhoeae Culture
- Shiga-toxin (+) Broth Culture

### Virology

- Arbovirus Panel (Encephalitis Viruses)
  - California Group, Eastern Equine, St. Louis, Western Equine
- Cytomegalovirus IgG Antibody
- Cytomegalovirus IgM Antibody
- Hepatitis B Surface Antibody
- Hepatitis B Surface Antigen
- Hepatitis C Testing
- Herpes Simplex IgG Antibody
- Herpes Simplex PCR
- HIV-1/HIV-2 Testing
- HIV STARHS Referral
- Influenza PCR
- Measles PCR
- MERS CoV (Epidemiology Approval Required)
- Mumps PCR
- Norovirus PCR (Epidemiology Approval Required)
- Respiratory Virus Antigen Panel: Adenovirus, Influenza A&B, Metapneumovirus, Parainfluenza 1-3, Rhinovirus-Enterovirus, RSV A&B
- Varicella Zoster IgG Antibody
- West Nile Virus IgM Antibody
- Virus Identification (Culture)

### Parasitology

- Blood Parasite - Smear
- Parasite (Fecal) – Gross Identification

---

**Comments**
# FOOD AND ENVIRONMENTAL MICROBIOLOGY SAMPLE SUBMISSION FORM

## Submitter Contact Information
**TO BE COMPLETED BY COLLECTOR**

<table>
<thead>
<tr>
<th>Name:</th>
<th>Matrix: FD</th>
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<tbody>
<tr>
<td>Email:</td>
<td>Master ACODE: FOODBORNE</td>
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</table>

## Receiving Information (FOR LAB USE ONLY)

<table>
<thead>
<tr>
<th>Phone #:</th>
<th>Date and time received in lab:</th>
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<tbody>
<tr>
<td>Received by:</td>
<td>Temperature of food (°C):</td>
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</table>

### SAMPLE INFORMATION: To be filled out by SUBMITTER. Please CHECK all that apply and be as detailed as possible. Please TYPE OR PRINT. Sample ID number: ____________________________

**Date of Collection:** ____________________________

**Temperature at collection (°C):** ____________________________

### NAME AND ADDRESS (SAMPLE COLLECTED FROM):

(Include town)

**Food:** (Be specific)

**Environmental swab:**

**Outbreak:** (CDC outbreak code and additional information)

### TEST REQUESTED: Please CHECK all that apply

- [ ] ECH70157 (E.coli O157)
- [ ] STECCUL-FD (Non-O157 Shiga Toxin Producing E.coli)
- [ ] SALMOSC-FD (Salmonella)
- [ ] LISTESC-FD (Listeria)
- [ ] STAPHCT-FD (Staphylococcus aureus enumeration) and STAPHEN-FD (Staphylococcus Enterotoxins)
- [ ] BACILCT-FD (Bacillus cereus enumeration) and BACILEN-FD (B.cereus Diarrheal Enterotoxin)
- [ ] CAMPYSC-FD (Campylobacter)
- [ ] SHIGAST-FD (Shigella)
- [ ] PERFRCT-FD (Clostridium Perfringens)
- [ ] HPC-FD (Standard Plate Count) [ ] TC (Total Coliform MPN) [ ] FC (Fecal Coliform MPN)
- [ ] SCOMBRO-FD (Scombroid referral only)

### CHAIN OF CUSTODY RECORD (Print and sign name)

Relinquished by: ____________________________

Received by: ____________________________

Date and time: ____________________________

Relinquished by: ____________________________

Received by: ____________________________

Date and time: ____________________________

### FOR LAB USE ONLY:

<table>
<thead>
<tr>
<th>DATE SET-UP:</th>
<th>FINAL RESULT:</th>
<th>Date and Time completed:</th>
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<td>ANALYSTS INITIALS:</td>
<td>ANALYSTS INITIALS:</td>
<td>ANALYSTS INITIALS:</td>
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Appendix B: LEGAL AUTHORITY

1) Statutes
   i) 19a-25 Confidentiality of Records

2) Regulations
   i) 19a-25-1 to 19a-25-4 Disclosure of Health Data
   ii) 19a-36-A1 - 19a-36-A12 Reportable Diseases, Investigations, etc.
   iii) 19-13-B42(r) Control of Disease in Food Service Establishments

3) Attorney General Opinion
   i) Authority to obtain information during an outbreak
Sec. 19a-25. (Formerly Sec. 19-6a). Confidentiality of records procured by the Department of Public Health or directors of health of towns, cities or boroughs. All information, records of interviews, written reports, statements, notes, memoranda or other data, including personal data as defined in subdivision (9) of section 4-190, procured by the Department of Public Health or by staff committees of facilities accredited by the Department of Public Health in connection with studies of morbidity and mortality conducted by the Department of Public Health or such staff committees, or carried on by said department or such staff committees jointly with other persons, agencies or organizations, or procured by the directors of health of towns, cities or boroughs or the Department of Public Health pursuant to section 19a-215, or procured by such other persons, agencies or organizations, for the purpose of reducing the morbidity or mortality from any cause or condition, shall be confidential and shall be used solely for the purposes of medical or scientific research and, for information obtained pursuant to section 19a-215, disease prevention and control by the local director of health and the Department of Public Health. Such information, records, reports, statements, notes, memoranda or other data shall not be admissible as evidence in any action of any kind in any court or before any other tribunal, board, agency or person, nor shall it be exhibited or its contents disclosed in any way, in whole or in part, by any officer or representative of the Department of Public Health or of any such facility, by any person participating in such a research project or by any other person, except as may be necessary for the purpose of furthering the research project to which it relates. Notwithstanding the provisions of chapter 55, the Department of Public Health may exchange personal data for the purpose of medical or scientific research, with any other governmental agency or private research organization; provided such state, governmental agency or private research organization shall not further disclose such personal data. The Commissioner of Public Health shall adopt regulations consistent with the purposes of this section to establish the procedures to ensure the confidentiality of such disclosures. The furnishing of such information to the Department of Public Health or its authorized representative, or to any other agency cooperating in such a research project, shall not subject any person, hospital, sanitarium, rest home, nursing home or other person or agency furnishing such information to any action for damages or other relief because of such disclosure. This section shall not be deemed to affect disclosure of regular hospital and medical records made in the course of the regular notation of the care and treatment of any patient, but only records or notations by such staff committees pursuant to their work.


History: 1971 act made provisions applicable to data procured by staff committees of accredited facilities, excluded studies of "maternal and perinatal" morbidity and rewrote provision re effect of provisions on disclosure of regular hospital and medical records; P.A. 77-346 specifically included as confidential records "personal data as defined in subsection (i) of section 4-190" and added provision re exchange of personal data for
research purposes between health department and other agencies and organizations; P.A. 77-614 and P.A. 78-303 replaced commissioner and department of health with commissioner and department of health services, effective January 1, 1979; Sec. 19-6a transferred to Sec. 19a-25 in 1983; P.A. 84-380 made technical change to reflect numbering of Subdivs. in Sec. 4-190; P.A. 93-291 applied provisions to records and information procured by the department or local health directors concerning communicable diseases; P.A. 93-381 and P.A. 93-435 replaced department and commissioner of health services with department and commissioner of public health and addiction services, effective July 1, 1993; P.A. 95-257 replaced Commissioner and Department of Public Health and Addiction Services with Commissioner and Department of Public Health, effective July 1, 1995.

Annotation to former section 19-6a:

Statute is designed not to disqualify a physician from testifying but to prevent him from disclosing confidential matters. 180 C. 314.

Annotations to present section:

Statute is designed not to disqualify a physician from testifying but to prevent him from disclosing confidential matters. 180 C. 314. The privilege afforded by section is limited to designated materials of a hospital staff committee generated primarily for the purpose of studying morbidity and mortality, undertaken specifically for the purpose of reducing the incidence of patient deaths. 251 C. 790.

Cited. 40 CS 188.

(Accessed 11/19/10)
Disclosure of Health Data

19a-25-1. Definitions
As used in Sections 19a-25-1 through 19a-25-4, inclusive, of the Regulations of Connecticut State Agencies:

1. "Aggregate health data" means health data that is obtained by combining like data in a manner that precludes the identification of the individual or organization supplying the data or described in the data.

2. "Anonymous medical case history" means the description of an individual's illness in a manner that precludes the identification of the individual or organization supplying the data or described in the data.

3. "Commissioner" means the commissioner of the Department of Public Health.

4. "Department" means the Department of Public Health.

5. "Disclosure" or "disclose" means the communication of health data to any individual or organization outside the department.

6. "Health data" means information, recorded in any form or medium, that relates to the health status of individuals, the determinants of health and health hazards, the availability of health resources and services, or the use and cost of such resources and services.

7. "Identifiable health data" means any item, collection, or grouping of health data that makes the individual or organization supplying it, or described in it, identifiable.

8. "Individual" means a natural person.

9. "Local Director of Health" means the city, town, borough, or district Director of Health or any person legally authorized to act for the local director of health.

10. "Medical or scientific research" means the performance of activities relating to health data, including, but not limited to:
   (A) describing the group characteristics of individuals or organizations;
   (B) characterizing the determinants of health and health hazards;
   (C) analyzing the inter-relationships among the various characteristics of individuals or organizations;
   (D) the preparation and publication of reports describing these matters; and
   (E) other related functions as determined by the commissioner.

11. "Organization" means any corporation, association, partnership, agency, department, unit, or other legally constituted institution or entity, or part thereof.

12. "Studies of morbidity and mortality" means the collection, application, and maintenance of health data on:
   (A) the extent, nature, and impact of illness and disability on the population of the state or any portion thereof;
   (B) the determinants of health and health hazards, including but limited to,
      (i) infectious agents of disease,
      (ii) environmental toxins or hazards,
      (iii) health resources, including the extent of available manpower and resources, or
      (iv) the supply, cost, financing or utilization of health care services.
   (C) diseases on the commissioner's list of reportable diseases and laboratory findings pursuant to section 19a-215 of the Connecticut General Statutes; or
   (D) similar health or health related matters as determined by the commissioner.
(Effective October 30, 1998.)
Disclosure of Health Data

19a-25-2. Disclosure of aggregate health data, anonymous medical case histories, and reports of the findings of studies of morbidity and mortality
(a) The department may, at the discretion of the commissioner, publish, make available, and disseminate aggregate health data, anonymous medical case histories, and reports of the findings of studies of morbidity and mortality, provided such data, histories, and reports:
   (1) Are prepared for the purpose of medical and scientific research; and
   (2) Do not include identifiable health data.
(b) No individual or organization with lawful access to such reports shall be compelled to testify with regard to such reports. Publication or release of such reports shall not subject said report or related information to subpoena or similar compulsory process in any civil or criminal, judicial, administrative or legislative proceeding.

19a-25-3. Disclosure of identifiable health data
(a) The department shall not disclose identifiable health data unless:
   (1) The disclosure is to health care providers in a medical emergency as necessary to protect the health, life, or well-being of the person with a reportable disease or condition pursuant to section 19a-215 of the Connecticut General Statutes;
   (2) The disclosure is to health care providers, the local director of health, the department, another state or public health agency, including those in other states and the federal government, or other persons when deemed necessary by the department in its sole discretion for disease prevention and control pursuant to section 19a-215 of the Connecticut General Statutes or for the purpose of reducing morbidity and mortality from any cause or condition, except that every effort shall be made to limit the disclosure of identifiable health data to the minimal amount necessary to accomplish the public health purpose;
   (3) The disclosure is to an individual, organization, governmental entity in this or another state or to the federal government, provided the department determines that:
      (A) Based upon a written application and such other information as required by the department to be submitted by the requesting individual, organization or governmental entity the data will be used solely for bona fide medical and scientific research;
      (B) The disclosure of data to the requesting individual, organization or governmental entity is required for the medical or scientific research proposed;
      (C) The requesting individual, organization, or governmental entity has entered into a written agreement satisfactory to the department agreeing to protect such data in accordance with the requirements of this section and not permit disclosure without prior approval of the department; and
      (D) The requesting individual, organization or governmental entity, upon request of the department or after a specified date or event, returns or destroys all identifiable health data provided by the department and copies thereof in any form.
   (4) The disclosure is to a governmental entity for the purpose of conducting an audit, evaluation, or investigation required by law of the department and such governmental entity agrees not to use such data for making any determination as to whom the health data relates.
(b) Any disclosure provided for in this section shall be made at the discretion of the department, provided the requirements for disclosure set forth in the applicable provisions of this section have been met. For disclosures under this section to governmental entities, the commissioner may waive the requirements of this section except for the requirements of subdivision (A) of subsection (3).

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Disclosure of Health Data

(c) Notwithstanding any other provisions of this section, no identifiable health data obtained in the course of activities undertaken or supported under this section shall be subject to subpoena or similar compulsory process in any civil or criminal, judicial, administrative, or legislative proceeding, nor shall any individual or organization with lawful access to identifiable health data under the provisions of this section be compelled to testify with regard to such health data.
(Effective October 30, 1998.)

19a-25-4. Use of health data for enforcement purposes
(a) Notwithstanding any provisions of sections 19a-25-1 to 19a-25-3, inclusive of the Regulations of State Agencies, the department may utilize, in any manner, health data including but not limited to aggregate health data, identifiable health data, and studies of morbidity and mortality, in carrying out and performing its statutory and regulatory responsibilities and to secure compliance with or enforcement of any laws. Where such data is used in an enforcement action brought by the department or any other state agency, disclosure to parties to the action of such data shall be permitted only if required by law and said parties may not further disclose such data except to a tribunal, administrative agency or court with jurisdiction over the enforcement action. Disclosure under this section does not constitute a waiver or release of the confidentiality that protects such data.
(Effective October 30, 1998.)
Reportable Diseases and Laboratory Findings

19a-36-A1. Definitions
As used in Sections 19a-36-A1 to 19a-36-A55:

(a) "Authorized agent" means an individual designated by a local director of health to act for him or her in the performance of any of his or her duties.

(b) "Carrier" means an infected person or animal who, without any apparent symptoms of communicable disease, harbors a specific infectious agent and may serve as a source of infection for humans. The state of harboring a specific infectious agent may occur in an individual with an infection that is inapparent throughout its course (asymptomatic carrier), or in an individual during the incubation period, convalescence, and post-convalescence of a clinically recognizable disease (incubatory carrier and convalescent carrier). The carrier state may be of short duration (transient carrier) or long duration (chronic carrier).

(c) "Case" means a person or animal who exhibits evidence of disease.

(d) "Cleaning" means the process of removal of organic matter conducive to growth or maintenance of infectivity of infectious agents by scrubbing and washing as with hot water and soap.

(e) "Commissioner" means the state commissioner of health services.

(f) "Communicable disease" means a disease or condition, the infectious agent of which may pass or be carried directly or indirectly, from the body of one person or animal to the body of another person or animal.

(g) "Communicable period" means any time period during which a specific infectious agent may be transferred directly or indirectly from an infected person or animal to another human or animal.

(h) "Contact" means a person or animal known to have had association with an infected person or animal in such a manner as to have been exposed to a particular communicable disease.

(i) "Contamination" means the presence of undesirable substance or material which may contain an infectious agent on external body surfaces (e.g., skin), articles of apparel, inanimate surfaces or in food or beverages.

(j) "Cultures" mean growths of an infectious agent propagated on selected living or artificial media.

(k) "Date of onset" means the day, month and year on which the case or suspected case experienced the first sign or symptoms of the disease.

(l) "Department" means the Connecticut Department of Health Services.

(a) "Disinfection" means a directly applied chemical or physical process by which the disease producing powers of infectious agents are destroyed.

(1) Concurrent disinfection" means the immediate disinfection and disposal of body discharges, and the immediate disinfection or destruction of all infected or presumably infected materials.

(2) "Terminal disinfection" means the process of rendering the personal clothing and immediate physical environment of a patient free from the probability of conveying an infectious agent to others after removal of the patient or at a time when the patient is no longer a source of infection.

(n) "Epidemic" means the occurrence of cases of illness clearly in excess of normal expectancy over a specific time period in a community, geographic region, building or institution. The number of cases indicating an epidemic may vary according to the causative agent, size and type of population exposed, previous experience with the disease, and time and place of occurrence. An outbreak of disease is an epidemic.

(o) "Epidemiologic investigation" means an inquiry into the incidence, distribution and source of disease to determine its cause, means of prevention, and efficacy of control measures.

(p) "Foodborne outbreaks" means illness in two or more individuals acquired through the ingestion of common-source food or water contaminated with chemicals, infectious
agents or their toxic products. Foodborne outbreaks include, but are not limited to, illness due to heavy metal intoxications, staphylococcal food poisoning, botulism, salmonellosis, shigellosis, Clostridium perfringens intoxication and hepatitis A.

(q) "Foodhandler" means a person who prepares, processes, or otherwise handles food or beverages for people other than members of his or her immediate household.

(r) "Health care facility" means any hospital, long term care facility, home health care agency, clinic or other institution licensed under Chapter 368v of the Connecticut General Statutes and also facilities operated and maintained by any state agency for the care or treatment of mentally ill persons or persons with mental retardation or substance abuse problems.

(s) "Health care provider" means a person who has direct or supervisory responsibility for the delivery of health care or medical services. This shall include but not be limited to: licensed physicians, nurse practitioners, physician assistants, nurses, dentists, medical examiners, and administrators, superintendents and managers of health care facilities.

(t) "Incubation period" means the time interval between exposure to a disease organism and the appearance of the first symptoms of the resulting disease.

(u) "Infection" means the entry and multiplication of an infectious agent in the body of a person or animal with or without clinical symptoms.

(v) "Infectious agent" means a microorganism capable of producing infection with or without disease.

(w) "Isolation" means the use of special precautions during the period of communicability to prevent transmission of an infectious agent. Such special precautions may include: physical separation of infected persons or animals from others, or precautions such as blood precautions that do not necessarily result in physical separation of individuals.

(x) "Laboratory" means any facility licensed, or approved by the department in accordance with section 19a-30 of the Connecticut General Statutes.

(y) "Local director of health" means and includes the city, town, borough or district director of health and any person legally authorized to act for the local director of health.

(z) Medical information" means the recorded health information on an individual who has a reportable disease or who has symptoms of illness in the setting of an outbreak. This information includes details of a medical history, physical examination, any laboratory test, diagnosis, treatment, outcome and the description and sources of suspected causative agents for such disease or illness.

(aa) Nosocomial infection" means infections that develop within a hospital or other health care facility or are produced by microorganisms acquired while in a hospital or health care facility.

(bb) Outbreak." See "epidemic."

(cc) Quarantine" means the formal limitation of freedom of movement of persons or animals exposed to, or suffering from a reportable disease for a period of time not longer than either the longest incubation period or the longest communicable period of the disease, in order to prevent spread of the infectious agent of that disease.

(dd) Reportable disease" means a communicable disease, disease outbreak, or other condition of public health significance required to be reported to the department and local health directors.

(ee) Reportable laboratory finding" means a laboratory result suggesting the presence of a communicable disease or other condition of public health significance required to be reported to the department and local health directors.

(ff) State epidemiologist" means the person designated by the Commissioner as the person in charge of communicable disease control for the state.

(gg) Surveillance" means the continuing scrutiny of all aspects of occurrence and spread of a disease relating to effective control of that disease, which may include but not be limited to the collection and evaluation of: morbidity and mortality reports; laboratory reports of significant findings; special reports of field investigations of epidemics and individual cases; data concerning the availability, use, and untoward side effects of the substances

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used in disease control, such as rabies vaccine; and information regarding immunity levels in segments of the population.

(hh) Suspected case" means a person or animal suspected of having a particular disease in the temporary or permanent absence of definitive clinical or laboratory evidence.

(ii) Other condition of public health significance" means a noncommunicable disease caused by a common source or prevalent exposure such as pesticide poisoning, silicosis or lead poisoning.

Effective October 25, 1989.)

19a-36-A2. List of reportable diseases and laboratory findings
The commissioner shall issue a list of reportable diseases and laboratory findings within sixty days of the effective date of these regulations, on the next January 1, and annually thereafter. The list shall show it is the current list and shall specify its effective date. This list shall also include but not be limited to the reporting category of each disease, procedures for the reporting, and minimum investigation and control measures for each disease. Listed diseases are declared reportable diseases as of the effective date of approval by the commissioner.

(a) The commissioner in consultation with the state epidemiologist will annually review the existing list and develop recommendations for deletions or additions to the list.

(b) The state epidemiologist or other commissioner designee shall convene and chair an advisory committee to review the recommendations for any changes to the list prior to preparing the final list for that year. This committee shall make recommendations to the commissioner regarding the contents of the list.

(c) The commissioner shall review the advisory committee's recommendations and make final deletions or additions to the list to take effect January 1 of the next year. He will furnish copies of the list before January 1 to the following:

(1) physicians licensed by the department;

(2) directors of clinical laboratories licensed, registered or approved by the department;

(3) local directors of health in Connecticut;

(4) health care facilities licensed under Chapter 368v of the Connecticut General Statutes.

(Effective October 25, 1989.)

19a-36-A3. Persons required to report reportable diseases and laboratory findings
(a) Reportable Diseases.

(1) Every health care provider who treats or examines any person who has or is suspected to have a reportable disease shall report to the local director of health or other health authority within whose jurisdiction the patient resides and to the department such information about the affected person as described in section 19a-36-A4 of these regulations.

(2) If the case or suspected case of reportable disease is in a health care facility, the person in charge of such facility shall ensure that reports are made to the local director of health and the department in the manner specified in section 19a-36-A4 of these regulations. The person in charge shall designate appropriate infection control or record-keeping personnel for this purpose.

(3) If the case or suspected case of reportable disease is not in a health care facility and if a health care provider is not in attendance or is not known to have made a report within the appropriate time specified in section 19a-36-A4, such report of reportable diseases shall be made to the local director of health or other health authority within whose jurisdiction the patient lives and the department in the manner specified in section 19a-36-A4 by:

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Reportable Diseases and Laboratory Findings

(A) the administrator serving a public or private school or day care center attended by any person affected or apparently affected with such disease;

(B) the person in charge of any camp;

(C) the master or any other person in charge of any vessel lying within the jurisdiction of the state;

(D) the master or any other person in charge of any aircraft landing within the jurisdiction of the state;

(E) the owner or person in charge of any establishment producing, handling or processing dairy products, other food or non-alcoholic beverages for sale or distribution;

(F) morticians and funeral directors.

(4) Each local director of health shall report or ensure reporting to the department within 24 hours of each case or suspected case of a Category I reportable disease and such additional information of which he has knowledge as described in section 19a-36-A4 of these regulations.

(b) Reportable laboratory findings. - The director of a laboratory that receives a primary specimen or sample which yields a reportable laboratory finding shall be responsible for reporting such findings within forty-eight (48) hours to the local director of health of the town in which the affected person normally resides, or, in the absence of such information, of the town from which the specimen originated, and to the department on forms provided by the department.

(1) When a laboratory identifies or presumptively identifies a significant isolate or other finding that requires confirmation by the laboratory as required in the annual list, the director must submit that isolate or specimen from which the finding was made to the department's laboratory division.

(2) Laboratory tests and confirmatory tests for certain reportable diseases as specially indicated in the annual list shall be exempted from any and all fees for the state laboratory services in accordance with Section 19a-26 of the Connecticut General Statutes.

(Effective October 25, 1989.)

19a-36-A4. Content of report and reporting of reportable diseases and laboratory findings

(a) Reportable diseases.

(1) Each report of a case or suspected case of reportable disease shall include the full name and address of the person reporting and of the physician attending; the diagnosed or suspected disease and date of onset; the full name, age, race/ethnicity, sex and occupation of the affected individual and other facts the department or local director of health requires for purposes of surveillance, control and prevention of reportable diseases. The reports shall be sent in envelopes marked "CONFIDENTIAL."

(2) Reports may be written or oral as required by the category of disease as follows:

(A) Category I: diseases of high priority because of need for timely public health action: reportable immediately by telephone on day of recognition or suspicion of disease; on weekdays to both, the local health director of the town in which the patient resides and the department, on weekends to the department. A completed disease report form provided by the department must also be mailed to both the local health director and the department within 12 hours.

(B) Category II: diseases of significant public health importance, usually requiring public health action: reportable by mail to the local director health and the department within 12 hours of recognition or suspicion on a form provided by the department.

(b) Reportable laboratory findings.

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(1) Each report of reportable findings shall include the name, address, age sex, and, if known, race/ethnicity of the person affected, the name and address of the attending physician, the identity of the infectious agent or other reportable laboratory findings, and the method of identification.

(2) Reports shall be mailed to the local director of health of the town in which the patient resides and to the department within 48 hours of making the finding in envelopes marked "CONFIDENTIAL."

(Effective October 25, 1989.)

19a-36-A5. Confidentiality of data
All epidemiologic information which identifies an individual and which is gathered by the state or local health department in connection with the investigation of reported cases or suspected cases of disease or during the investigation of outbreaks of disease shall be kept in compliance with current confidentiality statutes.

(Effective October 25, 1989.)

19a-36-A6. Investigation and control of reportable disease and outbreaks by the department
(a) The department, in cooperation with the local director of health, in the investigation and control of reportable disease shall make or cause to be made such investigation as it deems necessary and shall secure all such data as may assist it in establishing adequate control measures.

(b) In order to investigate and control any apparent outbreak or unusual occurrence of reportable disease, the department shall institute such special disease surveillance, follow-up reports and control measures as it deems necessary.

(c) Individual medical information pertaining to cases of reportable disease, persons affected by outbreaks of disease or significant increases in the rate of nosocomial infection shall be provided when requested to an investigator who presents official identification of the department or the local department of health. Such an investigator may be an employee of the State or local health department.

(Effective October 25, 1989.)

19a-36-A7. Diseases not enumerated
Diseases not specifically listed pursuant to section 19a-36-A2 and presenting a special problem shall be reported and controlled in accordance with special instructions of the state department of health or, in the absence of such instructions, in accordance with orders and directions of the local director of health.

(Effective October 25, 1989.)

19a-36-A8. General measures for control of reportable diseases
The local director of health, in instituting measures for the control of reportable diseases:
(a) Investigation shall make, or cause to be made, such investigations as he may deem necessary and shall secure all such data as may assist him in establishing adequate control measures;

(b) Isolation and orders shall establish and maintain quarantine, isolation or such other measures for control as are required by statute, the public health code or special instructions of the state department of health, and, when possible, shall issue his instructions and orders in writing or on printed forms;

(c) Removal shall have the authority to set up proper isolation or quarantine of an affected person or persons, carrier or contact, when, in his opinion or in the opinion of the state commissioner of health, this is not or cannot be effectively maintained on the premises occupied by such person or persons by methods designated in this part; to remove or require the removal of such person or persons to a hospital or other proper place

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designated by him; or to employ such guards or officers as may be necessary to maintain
effective isolation or quarantine;

(d) Instruction shall provide, by himself or his authorized agent, for the specific instruction of
cases, contacts, their attendants and all other persons affected, in the proper methods for
the prevention of the spread of the disease and shall supply such information and
literature as may be required by law or by the instructions of the state department of
health;

(e) Enforcement shall make, at intervals during the period of communicability, inquiry or
investigation to satisfy himself that the measures instituted by hi for the protection of
others are being properly observed;

(f) Laboratory tests shall, when the control or release of a case, contact or carrier of a
reportable disease is dependent upon laboratory findings, require the specimens upon
which such findings are based to be examined by the laboratory division of the state
department of health or by a laboratory specifically approved for that purpose by the state
department of health and shall, by himself or his authorized agent, secure and submit
release cultures or specimens for examination; in cases of enteric diseases all release
specimens shall be taken at least one week after specific therapy has been discontinued;

(g) Schools - Isolation shall, in the event of an outbreak of a communicable disease in any
public, private, parochial or church school, make a prompt and thorough investigation;
control such an outbreak by individual examination of pupils, teachers and other persons
associated with the outbreak; employ such other means as he deems necessary to
determine the source of infection or to provide for the segregation of infected persons; in
the event of an outbreak of a communicable disease in any school, require school
physicians and school nurses to conform to the orders, regulations and restrictions
issued by him;

(h) Schools - Readmission shall, in the case of any school child who has been excluded
from school for having been a case, contact or carrier of a communicable disease, by
himself or his authorized agent, issue a permit for such child to re-enter school when in
his opinion such child is no longer infectious;

(i) Unusual disease shall, when an unusual or rare disease occurs in any part of the state or
when any disease becomes so prevalent as to endanger the state as a whole, contact
the state department of health for assistance, and shall cooperate with the
representatives of the state department of health acting under the direction of the state
commissioner of health;

(j) Other measures shall introduce such other measures as he may deem advisable.

(Effective October 25, 1989.)

19a-36-A9. Control of diseases suspected of being reportable
The local director of health, on receiving a report of a disease suspected of being reportable, shall
confer with the physician or other person making such report, make further examination or
investigation as he deems necessary and advise, recommend or establish such procedures as he
may deem necessary to protect the public health until the character of the disease is definitely
determined.

(Effective October 25, 1989.)

19a-36-A10. Presumably exposed persons may be examined and controlled
The local director of health, when he has reasonable grounds to believe that a person or persons
may have been exposed to a communicable disease, may control such persons as known
contacts and may make such examinations and adopt such measures as he deems necessary
and proper for the protection of the public health and the prevention of the spread of disease.

(1) The conviction of any person for any offense involving sexual promiscuity or illicit sex
relations shall constitute reasonable grounds for the local director of health to believe that
that person may have been exposed to a communicable disease and shall justify the
examination and such other measures of control of that individual as are deemed

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necessary and proper by the state department of health for the protection of public health and the prevention of spreading of disease.

(2) The warden or other person in charge of any prison or jail in the state shall notify the prison or jail physician, in writing, within twenty-four hours upon the receipt of a prisoner who may have been exposed to a communicable disease and of every prisoner who has been convicted of any offense involving sexual promiscuity or illicit sex relations. A routine medical examination shall be made on every prisoner whose conviction involves sexual promiscuity or illicit sex relations. Such routine medical examination shall include the taking of a blood specimen for serological test for syphilis and the taking of three smears for gonococcal taken not less than twenty-four hours apart and, if the prisoner is found to be infected, treatment shall be instituted as necessary. The tests referred to above shall be performed in the bureau of laboratories of the state department of health or in a laboratory specifically approved for these purposes by the state department of health, and they shall be performed in a manner that meets the approval of the state department of health. Upon the expiration of a sentence, any person having syphilis or gonococcal infection, whether in an infectious or non-infectious stage, and in need of further follow-up treatment shall be reported to the state department of health by the attending physician, who shall give the name, sex, age and marital status and a record of the treatment given while such person was imprisoned.

(Effective October 25, 1989.)

19a-36-A11. Control of carriers of the infectious agent of communicable disease
Carriers, whether transient, convalescent or chronic, of the infectious agent of any communicable disease shall be maintained under observation until repeated laboratory examinations of appropriate specimens show the absence of the infectious agent. Examination of all such specimens shall be in conformity with subsection (f) of section 19a-36-A8.

(a) Any local director of health or physician who discovers any carrier of an infectious agent shall report the fact to the state department of health giving the full name, age, sex, occupation and address of such carrier. The state department of health shall, upon receipt of such report, notify the local director of health of the town, city or borough wherein the carrier resides. The local director of health concerned shall then communicate the fact to the carrier himself, or his guardian, giving specific instructions regarding the precautions necessary to protect others from infection.

(b) Any privy or latrine used by an enteric disease carrier shall be so constructed as to exclude flies and to meet the approval of the local director of health. The disinfection and disposal of its contents shall be in accordance with instructions given by the local director of health.

(c) A carrier of an infectious agent shall not engage in any occupation involving the handling of any food or beverage intended for the use of others.

(d) Enteric disease carriers shall not work on any public water supply or watershed.

(e) A carrier who changes his residence shall notify the local director of health of the town, city or borough in which he has been residing of the date of his departure, his destination and his new address. The local director of health shall immediately forward this information to the state department of health.

(f) The local director of health shall visit each carrier within his jurisdiction at least once every three months and shall render quarterly reports concerning each such carrier to the state department of health upon forms prescribed for the purpose.

(Effective October 25, 1989.)

19a-36-A12. Enteric disease carriers
(a) A chronic carrier of enteric disease shall be defined as a person who persists in excreting enteric pathogenic organisms for twelve months or more after onset of illness or probable
date of infection or one who, though he may never have been known to have the disease, has been shown to harbor the infectious agent in his body.

(b) All specimens for the release of enteric carriers from supervision shall be collected at least ten days after the cessation of any antibiotic therapy or any therapy directed at the disease.

(c) All specimens for the release of enteric carriers from supervision shall be examined in conformity with subsection (f) of section 19a-36-A8.

(d) Chronic carriers of the organisms causing typhoid fever and paratyphoid fever shall not be released from supervision until six successive specimens of urine and six successive specimens of feces, the last two of which shall be validated by collection of the specimen in a hospital or otherwise under direct supervision, have been found negative. Specimens for such examination shall be so collected that a time interval of not less than one month shall elapse between successive specimens of urine and between successive specimens of feces. The final two specimens of feces to be examined may be validated by the giving of lycopodium or a negative bile culture may be substituted for such validation.

(e) A chronic carrier of enteric disease excreting the organism in discharges other than the feces or urine shall not be released from supervision until negative cultures as outlined by the state department of health for the specific case have been obtained.

(Effective October 25, 1989.)
(r) No person while affected with any disease in a communicable form, or while a carrier of such disease, or while afflicted with boils, infected wounds, sores or an acute respiratory infection, shall work in any area of a food service establishment in any capacity in which there is a likelihood of such person contaminating food, drink or food contact surfaces with pathogenic organisms, or transmitting disease to other individuals; and no person known or suspected of being affected with any such disease or condition shall be employed in such an area or capacity. If the management of the food service establishment has reason to suspect that any employee has contracted any disease in a communicable form or has become a carrier of such disease, he shall notify the local director of health immediately. When the local director of health has reasonable cause to suspect possibility of disease transmission from any food service establishment employee, such director shall secure a morbidity history of the suspected employee, or make such other investigation as may be indicated, and take appropriate action. The director of health may require any or all of the following measures:

1. the immediate exclusion of the employee from all food service establishments;
2. the immediate closure of the food service establishment concerned until, in the opinion of the director of health, no further danger of disease outbreak exists;
3. restriction of the employee's services to some area of the food service establishment where there would be no danger of transmitting disease; and
4. adequate medical and laboratory examinations of the employee, or other employees, and of his and their body discharges; and
5. food employees shall not contact exposed ready-to-eat food with bare hands and shall use suitable utensils such as deli tissue, spatulas, tongs, single use disposable gloves or dispensing equipment, except when washing raw fruits and vegetables to remove soil and other contaminants. Food employees shall minimize bare hand contact with exposed food that is not in a ready-to-eat form. Ready-to-eat food includes: unpackaged potentially hazardous food that is cooked to the temperatures and time required for the specific food under section 19-13-B42(m)(1); raw, washed, cut fruits and vegetables; whole, raw fruits and vegetables that are presented for consumption without the need for further washing, such as at a buffet; and other food presented for consumption for which further washing or cooking is not required and from which rinds, peels, husks, or shells are removed.
April 25, 2008

Honorable J. Robert Galvin, M.D., M.P.H., M.B.A.
Department of Public Health
410 Capitol Avenue
Hartford, CT 06114

Dear Commissioner Galvin:

Your department has requested an opinion from this office regarding the following questions:

1. What is the authority of the Commissioner of the Department of Public Health to obtain customer identifying information and related product information from a retail food establishment in order to investigate or control a foodborne illness outbreak?

2. Is the consent of the customer required in order for the Department to obtain said information?

3. What is the Department’s ability to delegate this authority to local health authorities?

4. Does the Department have the ability to obtain a court order or subpoena for customer identifying information from retail food establishments.

It is the opinion of this office that the Department has the authority to obtain, without customer consent, customer identifying information from retail food establishments in connection with a foodborne illness outbreak. Although the Department does not have subpoena power, it may seek a court order compelling production of such information. The Department need not delegate this power to local health authorities because Department regulations already provide local health authorities this power.
April 25, 2008
John P. Galvin, M.D., M.P.H., M.B.A.
Commissioner
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I.

Conn. Gen. Stat. § 19a-215 vests the Department with broad authority in protecting the public from foodborne outbreaks. That statute provides in pertinent part that:

When a local director of health or his authorized agent or the Department of Public Health receives a report of a disease or laboratory finding on the commissioner's list of reportable disease and laboratory findings, either may contact first the reporting health care provider and then the person with the reportable finding to obtain such information as may be necessary to lead to the effective control of further spread of such disease.

Foodborne outbreaks are included in the list of reportable diseases and are defined by RCSA § 19a-36-A1 as follows:

“Foodborne outbreaks” means illness in two or more individuals acquired through the ingestion of common-source food or water contaminated with chemicals, infectious agents or their toxic products. Foodborne outbreaks include, but are not limited to, illness due to heavy metal intoxications, staphylococcal food poisoning, botulism, salmonellosis, shigellosis, Clostridium perfringens intoxication and hepatitis A.

The statutes and regulations give the Department broad power to gather data necessary to protect the public health. Our Supreme Court has noted that “the legislature has vested the commissioner of public health with expansive powers with respect to enacting and enforcing public health law...” Stepney, LLC v. Town of Fairfield, 263 Conn. 558, 821 A.2d 725 (2003). When interpreting statutes, they “...are to be construed in a manner that will not thwart [their] intended purpose...” Commission on Human Rights & Opportunities v. Sullivan Associates, 250 Conn. 763, 778, 739 A.2d 238 (1999). Generally, “statutes whose object is the protection and preservation of the public health” are considered remedial in purpose and therefore are construed liberally. Town of Wallingford v. Dep’t of Pub. Health, 262 Conn. 758, 778, 817 A.2d 644 (2003). Additionally, regulations issued by the Department are given the full force and effect of law. See Hartford Electric Light Co. v. Sullivan, 161 Conn. 145, 154 285 A.2d 352 (1971). The purpose behind the statutes and regulations relating to foodborne
illness outbreaks is to protect the public and control further incidents of illness. Those statutes and regulations are, therefore, to be liberally construed.

The Department's regulations delineate the authority of the Department to investigate and control reportable diseases and outbreaks. RCSA §19a-36-A6 provides, in pertinent part, that:

The department, in cooperation with the local director of health, in the investigation and control of reportable disease shall make or cause to be made such investigation as it deems necessary and shall secure all such data as may assist it in establishing adequate control measures.

According to this regulation, the Department shall secure "all such data" as may assist it in controlling a foodborne illness outbreak. "Where the legislature uses a broad term...in an administrative context, without attempting to define that term, it evinces a legislative judgment that the agency should define the parameters of that term on a case-by-case basis. The foregoing applies to regulations which have the force and effect of law. Validly enacted regulations of an administrative agency carry the force of statutory law." (Citations omitted; quotation marks omitted.) Kiniry v. State Dep't of Public Health, Superior Court, judicial district of Middlesex at Middletown, Docket No. 980085189 (Hartmere, J.) (May 11, 1999). The term "all such data as may assist" in controlling the foodborne illness outbreak allows the Department to determine, on a case by case basis, which data is necessary to investigate and control a foodborne illness outbreak, including identification of a foodborne illness source. Therefore, according to RCSA §19a-36-A6, the Department is entitled to records from a retail food establishment, such as a grocery store, if that date would assist in control of a foodborne illness outbreak. Information gathered through a customer's use of a store issued card which might reflect whether or not a certain item was purchased and the date of that purchase is critical information that can assist the Department in controlling a foodborne illness.

Further, Conn. Gen. Stat. § 19a-2a(8) provides that the Commissioner of the Department of Public Health shall have the power and duty to "...secure information and data concerning the prevention and control of epidemics and conditions affecting or endangering the public health and compile such information and statistics and shall disseminate among health authorities and the people of the state such information as may be of value to them." This broad grant of authority supports the Department's legal right to access customer identifying information from a commercial food establishment in the event of a
foodborne illness outbreak if the information would assist the Department in controlling the outbreak and preventing further illness.

We conclude, therefore, that the Department has the authority to secure all data that may assist it in establishing adequate control measures in connection with a foodborne illness outbreak. Therefore, the Department would be entitled to customer identifying records from a retail food establishment in connection with an investigation into such an outbreak.

II.

Responding to the second question presented, the Department has a broad grant of authority to access information relating to an investigation of reportable diseases and outbreaks without receiving the consent of individuals who may be affected by a reportable disease or outbreak. RCSA § 19a-36-A6 specifically allows access to "individual medical information pertaining to cases of reportable disease, persons affected by outbreaks of disease or significant increases in the rate of nosocomial infection..." The regulation further mandates that this information "shall be provided when requested to an investigator who presents official identification of the department or the local health department." The regulation does not require the Department to first receive consent from those individuals about whom the Department is obtaining information. Because the customers of a commercial food establishment may be "persons affected by" the outbreak of a foodborne illness, customer identifying data from a commercial food establishment is available to the Department without customer consent in controlling a foodborne illness outbreak.

Given the broad scope of the Department's authority to access private information in connection with the outbreak of a disease or illness, in the event of a foodborne illness outbreak the Department need not obtain customer consent to gain access to customer identifying information from a retail food establishment. However, the Department is under an obligation to keep such information confidential pursuant to Conn. Gen. Stat. § 19a-215(d).

III.

In responding to the third question presented, the Department need not separately delegate its authority to access customer identifying information from a retail food establishment to the local health director because Department regulations already provide the local health director such authority. The relevant regulations refer to both the Department and the local health authority. Specifically, RCSA §19a-36-A6 states that "[t]he department, in cooperation with the local director of health,...shall secure all such data as may assist it in
establishing adequate control measures.” Similarly, under RCSA § 19a-36-A8, the local director of health is specifically entitled to “secure all such data as may assist the local director of health in establishing adequate control measures” in connection with an investigation.

Therefore, there is no need for the Department to separately delegate any authority to the local health authority to gain access to customer identifying information from a retail food establishment because the local health director is granted this authority under RCSA § 19a-36-A8. The local health director is similarly obligated to keep such information confidential.

IV.

In response to your fourth question, the Department does not have the statutory authority to subpoena customer identifying information, but may seek a court order to obtain that information.1 Pursuant to Conn. Gen. Stat. § 19a-2a(2), the Commissioner of the Department has the authority to “…adopt and enforce regulations…as are necessary to carry out the purposes of the department as established by statute.” RCSA § 19a-36-A6 specifically allows the department to secure all such data as may assist the department in controlling foodborne illness outbreaks. If a commercial food establishment refuses to provide the department with data necessary to assist in control measures, pursuant to Conn. Gen. Stat. § 19a-2a, the Department should contact my office to pursue an action in Superior Court seeking a court order to compel production of such information.

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1 The Uniform Food Drug and Cosmetic Act, Conn. Gen. Stat. § 21a-91 et seq., also gives the Commissioner of Consumer Protection broad powers to protect the public from food that is injurious to the public's health. In instances of any foodborne illness outbreak, the Department of Public Health should immediately contact the Commissioner of Consumer Protection so that both agencies may use their broad powers to protect the public.
April 25, 2008

John P. Galvin, M.D., M.P.H., M.B.A.
Commissioner
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We trust the foregoing answers your concerns.

Very truly yours,

[Signature]

RICHARD BLUMENTHAL
ATTORNEY GENERAL

[Signature]

Jacqueline S. Hoell
Assistant Attorney General
Appendix C: MISCELLANEOUS TOOLS

1) Emergency Investigation Kit
   i) Supply List
   ii) Form List
   iii) Food Sample Collection Procedures
   iv) Environmental Sample Collection Procedures

2) Contact List

3) Foodborne Outbreak Checklist

4) Flow Charts
   i) FPP
   ii) LHD

5) Contributing Factors list
## Foodborne Outbreak Kit Inventory of Supplies

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Date inventory checked and/or replaced:</th>
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<tbody>
<tr>
<td></td>
<td>Date:</td>
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<tr>
<td>AFDO Food Emergency Preparedness Response Guide</td>
<td></td>
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<tr>
<td>Disaster Field Manual for CT EHS</td>
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<tr>
<td>Procedures to Investigate Foodborne Illness</td>
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<tr>
<td>Procedures to Investigate Waterborne Illness</td>
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<tr>
<td>Control of Communicable Diseases Manual</td>
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<tr>
<td>Clipboard with Forms (See attached list)</td>
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<tr>
<td>Sterile Sampling Utensils, Tongue Depressors</td>
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<tr>
<td>Whirl-Pak Bags and Sterile Containers</td>
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<tr>
<td>Disposal Gloves in assorted sizes</td>
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<tr>
<td>Environmental Sampling Sponges</td>
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<tr>
<td>Thermocouple with Regular and Fine Probes</td>
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<tr>
<td>Min/Max Thermometer</td>
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<tr>
<td>Insulated Cooler with Freezer Pack</td>
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<tr>
<td>Permanent Marker for Labeling Samples</td>
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<tr>
<td>Mini Mag Light Flashlight</td>
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<tr>
<td>Alcohol Prep Pads</td>
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<tr>
<td>Other items to include in Foodborne Outbreak Investigation Kits:</td>
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<tr>
<td>Stool Specimen Kits (provided by Field Epi)</td>
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<tr>
<td>Water Sampling Bottles (provided by Lab)</td>
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<tr>
<td>Camera / extra Batteries</td>
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<tr>
<td>Sanitizer Test Kits</td>
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<td>Tape Measure</td>
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<td>Lab Coat and Hair Restraint</td>
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<td>Cell Phone</td>
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<td>Pens and Pencils</td>
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<td>Notebook for field notes</td>
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Rev. 5/22/13
# Foodborne Outbreak Kit Forms Inventory

<table>
<thead>
<tr>
<th>FORMS</th>
<th>Date inventory checked and/or replaced:</th>
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<tbody>
<tr>
<td>Master List of Establishment Staff</td>
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<tr>
<td>Food Worker Interview Form</td>
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<tr>
<td>Master List of Food Items for the Suspect Event/Meal</td>
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<tr>
<td>Food Preparation Review Form</td>
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<tr>
<td>Stool Specimen Tracking Form</td>
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<tr>
<td><strong>Food and Environmental Microbiology</strong></td>
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<tr>
<td><strong>Sample Test Request Form</strong> (Use with Food and Environmental Sponge Samples)</td>
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<tr>
<td>Food Destruction Form</td>
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<tr>
<td>Embargo Form</td>
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<td>Embargo Release Form</td>
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<tr>
<td>Three Page Alert Complaint Form</td>
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## Sampling Procedures:

- **Drinking Water Sample Collection Microbiology – Coliform Sampling Protocol**
- **Instructions for Using Phosphate Buffer and Sterile Gloves**
- **Food Sample Collection Procedure**

## Other Forms Needed for Sample Submittal:

- **Stool Specimen Kits and Submittal Forms** (provided by Field Epi)
- **Water Sampling Bottles and Submittal Forms** (provided by Lab)
Food Sample Collection Procedure

All food sample submissions require pre-approval; some situations, food items, and tests require specific instructions.

**Before Collecting Food Samples**

- Consult with Food Protection, Epidemiology, and Lab in advance to determine which foods will be sampled.
- Before starting, wash hands thoroughly and dry with paper towel.
- Put on correct size food service gloves. Do not touch any portion of the food.

**Collecting Representative Samples**

- If food to be sampled is a retail packaged item, collect it in its original container AND an intact, unopened container of the same batch/lot for comparison.
- If it is a food service item (prepared food), collect at least 2 cups or more.
  - Use the sterile collection tools that were provided in the Emergency Investigation Kit. A dispensing utensil that is being used for the food item to be sampled may also be used. (E.g. Serving spoon in mashed potatoes on the serving line) A clean utensil that has been sanitized may also be used.
  - Collect samples in sterile containers or bags provided in the Emergency Kit; if none available, CLEAN, unused, food grade containers such as take out food containers, baggies, or zip lock bags are acceptable.
  - For large volumes of foods such as lasagna, roasts, etc. take the entire tray or roast so the lab can collect composite samples.
- Use care not to cross contaminate samples.
• Too much is better than not enough. Extra sample can always be discarded, but if too little sample is provided, the proper tests may not be able to be performed.

• Seal containers to prevent spillage, leakage, and contamination, and double-check them before transporting.

• Label containers accurately and fill out submittal form with identical information.

• Use waterproof markers to label samples.

**Storage & Transportation:**

• Refrigerate and transport on ice or ice packs in a clean insulated cooler.

• If frozen, keep frozen. If not frozen, do not freeze.

• Use dry ice for ice cream and frozen products.

• Deliver to Lab ASAP. If samples must be stored prior to transport, keep in transport cooler in a safe place (locked car, locked office, etc.) or a refrigerator where samples will not be subject to contamination from people or other foods.

• Maintain chain of custody.

• Call the FPP at 860-509-7297 if you have questions.
**Instructions for Using Phosphate Buffer and Sterile Gloves**

1. Label the bag with sample information if necessary.
2. Tear glove packet from bottom of bag along perforation and set aside.
3. Bag may contain a pre-moistened sponge (go to step 4) or a vial with a phosphate buffer solution (go to step 3a).
   a. If the bag has a vial, open the vial by holding the bag so the vial is upright, push the locking side tab out and then up. Invert the vial and empty the buffer into the bag to moisten the sponge. (Discard the empty vial).
   b. Squeeze sponge a few times to saturate it with the buffer.
4. Tear off top of bag along the perforation. Pull the tabs on each side to open.
5. Push sponge up from bottom of the bag from the outside. About half way up, squeeze out excess buffer.
6. Hold gloves by wrist end and gently shake to unfold. (One or both gloves may be used).
7. With gloved hand, carefully remove the sponge without touching the exterior of the bag with the glove or the sponge.
8. Using even and firm pressure, push the sponge in one direction across the desired area 10 times horizontally and 10 times vertically.
10. Close the bag by folding the top down three times (squeezing air out). Bend the wire ends over to seal the bag, squeezing out any air. Place in another whirl-pak bag and seal.
11. Store on ice and deliver to Lab ASAP.
# Contact Information For Outbreak Investigations

<table>
<thead>
<tr>
<th>CT Department of Public Health</th>
<th>Office</th>
<th>After Hours</th>
<th>E-mail</th>
<th>FAX</th>
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<tr>
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<td>860-920-6680</td>
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Foodborne Outbreak Investigation ‘Checklist’ for LHDs

This is only a guide! Some or all of the following may be done depending on the particulars of the outbreak. The order will vary and many will need to be done concurrently.

☐ Notify DPH that an outbreak may be occurring

☐ Preliminary Steps:
  o Obtain list of all food items served at event/meal in question – FAX to FPP
  o Assemble master list of all employees at FSE w. contact info, duties, etc. - FAX to FPP
  o Check emergency investigation kit for supplies and restock if necessary (stool kits, food sample collection containers, environmental swab kits, forms, labels, cooler, ice packs, etc.)

☐ On-site investigation:
  o Interview food workers and other employees as necessary
  o Exclude food workers with symptoms
  o Distribute stool kits (to be returned by employees w/in 48 hours)
  o Collect food and environmental samples
  o Embargo or destroy food that may be contaminated
  o Inform FPP of samples collected
  o Prepare lab submission forms (make copies)
  o Transport to lab

☐ Collect stool samples from food workers
  o Inform FPP that samples are being collected
  o Check samples for leakage, labeling, paperwork
  o Complete specimen tracking forms
  o Make copies of paperwork
  o Transport specimens to LAB
  o Inform food workers of lab results
  o Exclude positive food workers as required
  o Request additional stool specimens as warranted

☐ Evaluate sanitary condition of establishment

☐ Evaluate hygiene of food workers

☐ Exchange information with DPH (throughout investigation)

☐ Implement immediate control measures as warranted or issue closure order (DOH)

☐ Monitor controls or ensure closure order in effect

☐ Conduct food flow of suspected/implicated foods

☐ Determine contributing factors (contamination, survival, growth)

☐ Determine antecedents

☐ Determine long term controls

☐ Write report and submit to FPP

☐ Monitor establishment for long-term control implementation

Rev. 2/15/11
Food Protection Program Flowchart for Conducting FBI Outbreaks:

*This is a general overview of activities during an outbreak. The order in which they occur may be different for each individual investigation and many will take place concurrently.

1. FPP alerts partners of outbreak investigation. This may include Epidemiology Program, DCP, DoAG, Laboratory, FDA, or USDA.
2. FPP contacts LHD(s) directly and informs them of outbreak. FPP requests LHD to begin environmental investigation.
   *Completed within 24 hours of notification

Provide recommendations regarding control measures to local Director of Health.
   *within 48-72 hours of receiving LHD information

Receive completed food worker interview forms and review for pertinent information and connections.
   *Within 48-72 hours upon confirmation of outbreak

Conduct on site NVEAIS evaluation for entry into CDC database in conjunction with LHD.
   *Within 48 hours upon confirmation of outbreak

Received laboratory results are reviewed with EPI & LHD.
   *Within 24 hours of receipt

Continue to provide technical assistance to LHD, as necessary. Remain in contact with LHD, EPI, and other agencies as warranted on daily basis. Request report from LHD.

Rev 9/28/15
Local Health Department Flowchart for Conducting FBI Outbreaks:

1. Plan for investigation.
2. Stock all necessary forms, equipment, phone numbers, etc. in outbreak investigation kit.
3. Begin environmental investigation of establishment.
   *Completed within 24 hours of notification

1. Plan for investigation.
2. Stock all necessary forms, equipment, phone numbers, etc. in outbreak investigation kit.
3. Begin environmental investigation of establishment.
   *Completed within 24 hours of notification

1. Visit establishment.
2. Tell management or owner that you are responding to a complaint of foodborne illness associated with the establishment (& possibly other establishments).
   *Completed within 24 hours of notification

1. Gather complete list of food items or a copy of menu and fax to (860) 509-8071 ASAP.
2. Obtain names and phone numbers of party contacts or individuals who called the establishment directly to make a complaint.
3. Forward these names to the Epi Program ASAP. Do not interview case patients. Epi will do this.
   *Completed within 24 hours of notification

1. Obtain complete list of food workers and duties.
2. Interview all food workers separately using interview form.
3. Distribute stool collection kits to food workers.
   *Completed within 48 hours of notification

1. Gather complete list of food items or a copy of menu and fax to (860) 509-8071 ASAP.
2. Obtain names and phone numbers of party contacts or individuals who called the establishment directly to make a complaint.
3. Forward these names to the Epi Program ASAP. Do not interview case patients. Epi will do this.
   *Completed within 24 hours of notification

1. Decide what immediate control measures to implement within establishment.
2. Discuss control measures with manager/owner.
   *Completed within 48-72 hours of notification

1. Decide what immediate control measures to implement within establishment.
2. Discuss control measures with manager/owner.
   *Completed within 48-72 hours of notification

Before leaving, collect food, water, and environmental samples as warranted.

Deliver all samples to laboratory immediately for testing. Coordinate with the FPP.

1. Return to establishment as necessary to review effectiveness of control measures.
2. Conduct food flow diagrams of implicated/suspected food items.
3. Gather returned food worker stool kits and deliver to laboratory or coordinate with FPP for pickup.
   *Completed within 48 hours of distribution of stool kits

Complete Environmental Investigation portion of final report and submit to the FPP ASAP.
*typically completed within 2-3 weeks after start of investigation

Coordinate stool sample collection between establishment and laboratory throughout investigation.
*Typically completed within 1 week after start of investigation

Remain in contact with FPP, Epi Program, and establishment daily to discuss findings and next steps.
*Completed within 48 hours of distribution of stool kits

Local health department receives notification of FBI outbreak by DPH FPP or EPI Program. If notified by another source, notify DPH immediately.
Contributing Factors: Choose all that apply.

Contamination Factors:
C1 – Toxic substance part of the tissue
C2 – Poisonous substance intentionally/deliberately added
C3 – Poisonous substance accidentally/inadvertently added
C4 – Addition of excessive quantities of ingredients that are toxic in large amounts
C5 – Toxic container
C6 – Contaminated raw product – food was intended to be consumed after a kill step
C7 – Contaminated raw product – food was intended to be consumed raw or undercooked/under-processed
C8 – Foods originating from sources shown to be contaminated or polluted (such as a growing field or harvest area)
C9 – Cross-contamination of ingredients (cross-contamination does not include ill food workers)
C10 – Bare-hand contact by a food handler/worker/preparer who is suspected to be infectious
C11 – Glove-hand contact by a food handler/worker/preparer who is suspected to be infectious
C12 – Other mode of contamination (excluding cross-contamination) by a food handler/worker/preparer who is suspected to be infectious
C13 – Foods contaminated by non-food handler/worker/preparer who is suspected to be infectious
C14 – Storage in contaminated environment
C15 – Other source of contamination
C-N/A – Contamination Factors - Not Applicable

Proliferation/Amplification Factors:
P1 – Food preparation practices that support proliferation of pathogens (during food preparation)
P2 – No attempt was made to control the temperature of implicated food or the length of time food was out of temperature control (during food service or display of food)
P3 – Improper adherence of approved plan to use Time as a Public Health Control
P4 – Improper cold holding due to malfunctioning refrigeration equipment
P5 – Improper cold holding due to an improper procedure or protocol
P6 – Improper hot holding due to malfunctioning equipment
P7– Improper hot holding due to improper procedure or protocol
P8 – Improper/slow cooling
P9 – Prolonged cold storage
P10 – Inadequate modified atmosphere packaging
P11 – Inadequate processing (acidification, water activity, fermentation)
P12 – Other situations that promoted or allowed microbial growth or toxic production
P-N/A – Proliferation/Amplification Factors - Not Applicable

Survival Factors:
S1 – Insufficient time and/or temperature control during initial cooking/heat processing
S2 – Insufficient time and/or temperature during reheating
S3 – Insufficient time and/or temperature control during freezing
S4 – Insufficient or improper use of chemical processes designed for pathogen destruction
S5 – Other process failures that permit pathogen survival
S-N/A – Survival Factors - Not Applicable

Last updated: 6/24/2009
Appendix D: ENTERIC DISEASE GUIDANCE

1) Guidelines for Excluding Food Workers

2) Enteric Disease Fact Sheets
   i) Bacillus cereus intoxication/toxin mediated infection
   ii) Botulism
   iii) Campylobacteriosis
   iv) Cholera
   v) Clostridium perfringens toxin mediated infection
   vi) Cryptosporidiosis
   vii) Cyclosporiasis
   viii) Giardiasis
   ix) Hemolytic Uremic Syndrome
   x) Hepatitis A infection
   xi) Listeriosis
   xii) Norovirus
   xiii) Salmonellosis (non-typhoidal)
   xiv) Shiga toxin producing Escherichia coli
   xv) Shigellosis
   xvi) Staphylococcus aureus intoxication
   xvii) Trichinosis
   xviii) Typhoid/paratyphoid Fever
   xix) Vibrio infection (non-cholera)
   xx) Yersiniosis
To: Directors of Health  
Chief Sanitarians  
Certified Food Inspectors

From: Matthew Cartter, M.D., M.P.H.  
Director of Infectious Diseases & State Epidemiologist

Subject: Guidelines for Excluding Infected Food Service Workers from Commercial Food Establishments

Date: March 24, 2015

CAMPYLOBACTERIOSIS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until they are asymptomatic. Exclusion of asymptomatic individuals is indicated only for those with questionable hygienic habits. Proper hand washing should be stressed.

CRYPTOSPORIDIOSIS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until they are asymptomatic. Exclusion of asymptomatic individuals is indicated only for those with questionable hygienic habits. Proper hand washing should be stressed.

CYCLOSPORIASIS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until they are asymptomatic. Exclusion of asymptomatic individuals is indicated only for those with questionable hygienic habits. Proper hand washing should be stressed.

DIARRHEA – Undiagnosed
Persons with undiagnosed diarrhea should not work as a food service worker until 72 hours after clinical recovery from diarrhea and until cleared by local health authorities.

E. COLI O157 INFECTION AND OTHER SHIGA TOXIN-PRODUCING E. COLI (STEC) INFECTIONS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until two consecutive negative stool cultures spaced at least 24 hours apart are obtained. If the person was treated with antibiotics, cultures should be collected at least 48 hours after last dose. Assess other food handlers working in the establishment for any gastrointestinal symptoms. Those with any symptoms should submit a stool specimen for testing and be excluded from work until results return negative. The importance of proper hand washing should be stressed.
GIARDIASIS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until they are asymptomatic. Exclusion of asymptomatic individuals is indicated only for those with questionable hygienic habits. Proper hand washing should be stressed.

HEPATITIS A
Individuals with laboratory-confirmed infection should be excluded from handling any food until 7 days after onset of jaundice or 10 days after onset of symptoms (if jaundice is absent) and providing all symptoms have subsided. Consult with DPH regarding additional investigation at the food service establishment.

NOROVIRUS
Persons infected with norovirus should not work as a food service worker until at least 72 hours after clinical recovery from vomiting or diarrhea and until cleared by local health authorities.

SALMONELLOSI S
Individuals with laboratory-confirmed infection should be excluded from direct food handling until two consecutive negative stool cultures spaced at least 24 hours apart are obtained. If treated with antibiotics, cultures should be collected at least 48 hours after last dose. Assess other food handlers working in the establishment for any gastrointestinal symptoms. Those with gastrointestinal symptoms should submit a stool specimen for testing and be excluded from work until results return negative. The importance of proper hand washing should be stressed.

SHIGELLOSIS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until two consecutive negative stool cultures spaced at least 24 hours apart are obtained. If treated with antibiotics, cultures should be collected at least 48 hours after last dose. Follow up with the food establishment and assess other food handlers working in the establishment for any gastrointestinal symptoms. Those with gastrointestinal symptoms should submit a stool specimen for testing and be excluded from work until results return negative. The importance of proper hand washing should be stressed.

STAPHYLOCOCCAL INFECTIONS (CUTANEOUS)
No person should work as a food service worker until the local health director determines that the risk of transmitting staphylococcal bacteria through boils, abscesses, and other purulent lesions on hands, face, or nose have been eliminated.

TYPHOID FEVER
Persons infected with Salmonella typhi should not work as food service workers until clinical recovery from S. typhi infection and until three consecutive negative cultures are obtained from stool specimens taken not earlier than 1 month after onset of symptoms and at least 24 hour apart, and at least 48 hours after any antibiotic treatment.

VIBRIO INFECTION
Recommendations on exclusion from food handling should be made in conjunction with the Department of Public Health, Epidemiology and Emerging Infections Program.
VOMITING – Undiagnosed
Persons with undiagnosed vomiting should not work as a food service worker until at least 72 hours after clinical recovery from vomiting and until cleared by local health authorities.

YERSINIOSIS
Individuals with laboratory-confirmed infection should be excluded from direct food handling until they are asymptomatic. Exclusion of asymptomatic individuals is indicated only for those with questionable hygienic habits. Proper hand washing should be stressed.
Fact Sheet

What is *Bacillus cereus*?
*Bacillus cereus* is a spore forming toxin producing bacteria. These toxins can cause two types of illness: one type characterized by diarrhea (toxin mediated infection) caused by ingesting large numbers of the bacteria in food, and the other characterized by nausea and vomiting (foodborne intoxication) caused by ingesting the emetic toxin produced by the bacteria in the food.

Where is *B. cereus* bacteria found?
*B. cereus* is ubiquitous in the environment and is found at low levels in many raw, dried or processed foods.

How do these bacteria spread?
The bacteria spread through gastrointestinal intoxication caused by toxins produced by the *Bacillus cereus* bacterium.

Who gets *B. cereus*?
All people are believed to be susceptible to *B. cereus* food poisoning.

What are the symptoms of *B. cereus*?
The diarrheal type typically causes watery diarrhea, abdominal cramps, and vomiting in some patients; fever is uncommon.
The emetic (vomiting) type typically causes nausea and vomiting. Some patients may experience diarrhea; fever is uncommon.

How soon do symptoms appear?
Emetic (vomiting) *B. cereus* poisoning symptoms occur within 30 minutes to 6 hours. The diarrheal form appears within 6 to 15 hours.

How long can a person carry *B. cereus* bacteria?
Diarrheal and emetic (vomiting) forms of *B. cereus* food poisoning typically last between 12 and 24 hours. It is not transmitted person to person.

What is the treatment for *B. cereus* food poisoning?
Since severe diarrhea and vomiting may cause rapid dehydration, replacement of fluids is critical. No specific treatment is indicated except fluid replacement.

How can *B. cereus* food poisoning be prevented?
Foods should not remain at ambient temperatures after cooking, since the ubiquitous *B. cereus* spores can survive boiling, germinate, and multiply rapidly at room temperature. The emetic toxin is also heat-resistant, and therefore subsequent reheating will not destroy the toxin. Refrigerate leftover food promptly (toxin formation is unlikely at temperatures under 50° F.); reheat thoroughly and rapidly to avoid multiplication of microorganisms.
This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health care provider. If you have any questions about the disease described above or think that you may have this infection, consult a health care provider.
Fact Sheet

What is botulism?
Botulism is a serious illness caused by a nerve toxin made by the bacterium, *Clostridium botulinum*. A toxin is a poison that is released by some bacteria and viruses. There are three types of botulism: foodborne, wound, and infant.

Where are *Clostridium botulinum* bacteria found?
These bacteria are commonly found in the soil and grow best in low oxygen conditions.

How do these bacteria spread?
Foodborne botulism occurs when person eats preformed toxin present in contaminated food. It often involves improperly processed home canned foods. Infant botulism occurs when children eat spores that grow and produce bacteria. These bacteria then reproduce in the gut and release toxin. Infant botulism has been associated with eating honey that contains the bacterial spores. Light and dark corn syrups have also been reported to contain the spores, although cases of infant botulism have not been linked to corn syrup. Would botulism, a rare disease, occurs when spores get into an open wound and reproduce in an anaerobic (no oxygen) environment.

Who gets botulism?
Anyone can get foodborne or wound botulism. Infant botulism occurs among children less than 1 year of age.

What are the symptoms of botulism?
Foodborne and wound botulism produce symptoms that affect the nervous system. Symptoms include blurred or double vision, dry mouth, and muscle paralysis that may affect breathing. About 15% of persons with foodborne botulism die. Infant botulism has a wide range of symptoms including constipation, loss of appetite, weakness, an altered cry, and a striking loss of head control. About 2% of the cases of infant botulism die.

How soon do symptoms appear?
Symptoms of foodborne botulism usually appear 12 to 36 hours after eating the food that contains the toxin. However, it is possible for symptoms to take several days to develop. The incubation period for infant botulism is unknown since the exact time of ingestion often cannot be determined. Symptoms of wound botulism may take up to 2 weeks to appear.

How long can an infected person carry *Clostridium botulinum*?
*C. botulinum* toxin and organism may be shed at high levels in the feces of infants with botulism weeks to months after onset of illness. However no instance of secondary person-to-person transmission has been documented. Foodborne botulism patients typically excrete the toxin for shorter periods.

Should an infected person be excluded from school or work?
No instance of person-to-person spread has ever been documented for botulism; most infected people may return to school or work when they have recovered from their illness.

What is the treatment for botulism?
The symptoms of botulism make hospitalization necessary. If diagnosed early, botulism can be treated with an antitoxin, which blocks the action of the toxin circulating in the blood. This can
prevent patients from worsening, but recovery still takes many weeks. If left untreated, a patient may need to be on a breathing machine (ventilator) for weeks and would require intensive medical and nursing care. Infant botulism is treated with immune globulin (BabyBIG®, Botulism Immune Globulin Intravenous (Human) (BIG-IV)), which is similar to the antitoxin. Most cases of botulism recover with appropriate medical care.

**How can botulism be prevented?**

Honey and corn syrup should not be fed to infants less than 1 year old. All canned and preserved foods should be properly processed and prepared. Bulging containers should not be opened, and commercial cans with bulging lids should be returned unopened to the place of purchase. Goods with off-odors should not be eaten or even tasted. Home canned vegetables should be boiled, with stirring, for at least 3 minutes before eating.

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This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health care provider. If you have any questions about the disease described above or think that you may have this infection, consult a health care provider.
Fact Sheet

What is campylobacteriosis?
Campylobacteriosis is an illness that is caused by the bacterium, *Campylobacter*. This bacterium affects the intestinal tract and rarely, the bloodstream. It is a common cause of diarrhea in the United States. Most cases are seen in the summer months and can occur as single cases or outbreaks.

Where are *Campylobacter* bacteria found?
Poultry, cattle, pigs, and sheep may carry these bacteria in their intestines. Most raw poultry meat is contaminated with *Campylobacter*. Puppies, kittens and other pets may also be sources of human infection.

How do these bacteria spread?
*Campylobacter* bacteria are generally spread by eating contaminated food, including unpasteurized milk and untreated water, or by direct contact with fecal material from infected animals. Person-to-person spread occurs occasionally, particularly from very young children.

Who gets campylobacteriosis?
Anyone can get campylobacteriosis.

What are the symptoms of campylobacteriosis?
Campylobacteriosis may cause mild or severe diarrhea, abdominal pain, fever, nausea, and vomiting. Traces of blood or mucus may be found in the liquid stool.

How soon do symptoms appear?
The symptoms generally appear 2 to 5 days after the exposure (range 1 – 10 days).

How long can an infected person carry *Campylobacter*?
Generally, infected people will pass the bacteria in their stool for a few days to a week or more.

Should an infected person be excluded from school or work?
Since the organism is passed in the stool, people with active diarrhea who are unable to control their bowel habits (infants, young children, adults with poor bowel control/hygiene) should be excluded from school or work. Most infected people may return to school or work when diarrhea has ended.

What is the treatment for campylobacteriosis?
Most people infected with *Campylobacter* will recover on their own. Serious cases may require fluids to prevent dehydration. Antibiotics are occasionally used to treat severe cases or to shorten the carrier phase, which may be important for food handlers, children in daycare, and health care workers. Since relapses occasionally occur, some physicians might treat mild cases with antibiotics to prevent a recurrence of symptoms.

How can campylobacteriosis be prevented?
Always treat raw poultry, beef, and pork as if they are contaminated and handle accordingly.
• Wrap fresh meat in plastic bags at the market to prevent blood from dripping on other foods.
• Refrigerate foods promptly; minimize holding at room temperature.
• Cutting boards, counters, and utensils used for preparation should be washed immediately after use to prevent cross contamination with other foods.
• Avoid eating raw or undercooked meats.
• Make sure the correct internal cooking temperature is reached for each type of meat, particularly when using a microwave.
• Avoid eating raw eggs, uncooked foods with raw egg (e.g., cookie dough), or undercooked foods containing raw eggs.
• Avoid using or drinking raw milk or products made from raw milk.
• Avoid using or drinking untreated water.
• Wash hands carefully before and after food preparation.
• Make sure children, particularly those who handle pets, wash their hands.

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Fact Sheet

What is cholera?
Cholera is an illness caused by a bacterium called *Vibrio cholerae*. This bacterium affects the intestinal tract. Only a few cases are recognized in the United States each year.

Where are *V. cholerae* bacteria found?
*V. cholerae* can be found in people. The bacterium may also live in the environment in brackish (containing some salt) rivers and coastal waters. Shellfish eaten raw have been a source of cholera.

How do these bacteria spread?
Cholera bacteria are passed in stool and are spread by consuming contaminated food or water.

Who gets cholera?
Cholera is a rare disease in the United States. People traveling to foreign countries where outbreaks are occurring and people who consume raw or undercooked seafood from warm coastal waters subject to sewage contamination are at greatest risk.

What are the symptoms of cholera?
People infected with *V. cholerae* may experience mild to severe watery diarrhea, vomiting, and dehydration. In severe cases, shock and organ failure can occur. Without treatment, death can occur in more than 50% of cases within a few hours.

How soon do symptoms appear?
The symptoms generally appear 2 – 3 days after exposure (range 6 hours - 5 days).

How long can an infected person carry cholera?
Usually up to a few days after recovery; however, some people may carry it for several months.

What is the treatment for cholera?
Since severe diarrhea may cause rapid dehydration, replacement of fluids is critical. Antibiotics, such as tetracycline, are also used to shorten the duration of diarrhea and the shedding of cholera in stool. A vaccine is available and is sometimes recommended for travelers to certain foreign countries where cholera is occurring. However, the vaccine offers only partial protection (50%) for a short duration (2 to 6 months).

How can cholera be prevented?
The single most important preventive measure is to avoid consuming foods or water in foreign countries where cholera occurs, unless they are known to be safe or have been properly treated. All travelers to areas where cholera has occurred should observe the following recommendations:

- Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated bottled beverages with no ice.
Cholera

- Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.
- Avoid undercooked or raw fish or shellfish, including ceviche (a cold dish made with raw fish).
- Make sure all vegetables are cooked; avoid salads.
- Avoid foods and beverages from street vendors.
- Do not bring perishable seafood back to the United States.

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Fact Sheet

What is *Clostridium perfringens* toxin mediated infection?

*C. perfringens* is an anaerobic spore-forming bacterium that causes severe illness due to the production of toxins in the host after consumption of large numbers of bacteria in food. Anaerobic means that the bacterium is able to grow in places where no oxygen is present. *C. perfringens* is one of the most common causes of foodborne illness in the United States.

Where are *C. perfringens* bacteria found?

This bacterium is found in many environmental reservoirs such as soil and sediments. It is also frequently present in the intestinal tracts of humans and many domestic and feral animals. *C. perfringens* is also commonly found on raw meat and poultry.

How do these bacteria spread?

*C. perfringens* forms spores that can survive adverse conditions such as extreme temperatures. When conditions are ideal, the spores germinate and then the bacteria grow. If the food is served without a reheating process to kill the bacteria, live bacteria can be consumed.

Who gets *C. perfringens* food poisoning?

Populations most at risk for contracting a risk for *C. perfringens* infection include the very young and elderly. These at risk populations can experience more severe symptoms that may last up to 1-2 weeks. Complications of dehydration can occur in severe cases as well.

What are the symptoms of *C. perfringens* toxin mediated infection?

Persons infected with *C. perfringens* experience watery diarrhea, abdominal cramps and pain. Other common symptoms include fever, chills, and headache. A rare, but fatal complication, necrotic enteritis is caused by necrosis of the intestines as a result of septicemia.

How soon do symptoms appear?

Symptoms of *C. perfringens* can occur within 6 to 24 hours after consuming large numbers of the bacteria that are capable of producing toxins in the small intestine. The illness is typically over within 24 hours but less severe symptoms can continue in some individuals for up to 2 weeks.

How long can an infected person carry *C. perfringens*?

The disease generally lasts 24 hours. In the elderly or infirm, symptoms may last 1-2 weeks. Complications and/or death only occurs rarely.

Should an infected person be excluded from school or work?

No, *Clostridium perfringens* is not spread by person-to-person contact. Most infected persons may return to school or work when they have recovered from their illness.

What is the treatment for *C. perfringens*?

Rehydration and in severe cases, intravenous fluids and electrolyte replacement can be used to treat dehydration that can occur in some cases. Antibiotics are not recommended.

How can *C. perfringens* be prevented?

Time and temperature control of foods associated with *C. perfringens* infection is necessary for prevention. Beefs, poultry, gravies, and other dense dishes should be cooked thoroughly to the
proper internal temperature (145°F - 165°F depending on the food item) and then kept at a
temperature that is either warmer than 140°F or cooler than 41°F. after cooking. Meat dishes
should be served hot right after cooking and leftovers should be reheated to at least 165°F
before re-serving. If foods are to be cooled, it must be done rapidly - from 140°F to 70°F within 2
hours, then from 70°F. to below 41°F within another 4 hours. Large roasts, stews, refried beans,
and other similar dishes should be divided into smaller quantities before storing to facilitate rapid
cooling.

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consultation with a health care provider. If you have any questions about the disease described above or
think that you may have this infection, consult a health care provider.

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Fact Sheet

What is cryptosporidiosis?
Cryptosporidiosis is an intestinal illness caused by a one-cell parasite called Cryptosporidium parvum.

Where are Cryptosporidium parasites found?
Cryptosporidium parasites live in the intestines of infected people, cattle, and other domestic animals (e.g., cats and dogs).

How does this parasite spread?
The Cryptosporidium parasite is passed in the stool of an infected person or animal as an oocyst (egg). Ingestion of only a few oocysts in contaminated food or water can make a person ill. Person-to-person and animal-to-person transmission can occur.

Who gets cryptosporidiosis?
People who are most likely to become infected with Cryptosporidium include the following: children who attend day care centers, including diaper-aged children; child care workers; parents of infected children; international travelers; backpackers, hikers, and campers who drink unfiltered, untreated water; swimmers who swallow water while swimming in swimming pools, lakes, rivers, ponds, and streams; people who drink from shallow, unprotected well; and people who swallow water from contaminated sources.

What are the symptoms of cryptosporidiosis?
Frequent, nonbloody, watery diarrhea is the most common symptom of cryptosporidiosis. The diarrhea is associated with cramping abdominal pain. Fever, loss of appetite, nausea, and vomiting occur less often. Some infected persons may not have any symptoms.

How soon do symptoms appear?
The symptoms may begin 2 - 10 days after exposure (average 7 days).

How long can an infected person carry Cryptosporidium?
Oocysts, the infectious stage, will appear in the stool at the onset of symptoms and can continue to be passed in the stool for several weeks after symptoms end.

What is the treatment for cryptosporidiosis?
There is no specific treatment. When indicated, rehydration has proven to be effective. It is a self-limiting illness in people with healthy immune systems.

What can be done to prevent the spread of cryptosporidiosis?
Some important preventive measures are:

- Thoroughly wash hands after toilet visits and before eating or handling food.
- Wash all fruits and vegetables thoroughly, especially those that will not be cooked.
- Avoid consuming improperly filtered water from rivers, lakes, water parks, or swimming pools.
- Wash hands after contact with calves and other animals with diarrhea.
- Immunocompromised persons may consider boiling drinking water for 1 minute or using a water filter. Only filters capable of removing particles 0.1-1.0 µm in diameter should be considered. Chemical disinfectants are not effective against oocysts.
- Persons at increased risk should avoid sexual practices that involve possible contact with stool.

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Fact Sheet

What is cyclosporiasis?
Cyclosporiasis is an intestinal illness caused by *Cyclospora cayetanensis*, a one-cell parasite. The majority of cases are seen in the warmer months. In the last several years, outbreaks of the illness have been reported in the United States and Canada.

Where are *Cyclospora* parasites found?
*Cyclospora* is only known to be found in infected humans. The parasites are passed in the stool of an infected person.

How does this parasite spread?
*Cyclospora* is spread by people ingesting food or water that was contaminated with infected stool. Outbreaks of cyclosporiasis have been linked to various types of fresh produce. The parasite needs days or weeks after being shed in stool to become infectious, so it is unlikely that *Cyclospora* is passed directly from one person to another.

Who gets cyclosporiasis?
People of all ages are at risk for *Cyclospora* infection. In the past, cyclosporiasis was usually found in people who lived or traveled in developing countries. More recently, it is known that people can be infected worldwide, including the United States.

What are the symptoms of cyclosporiasis?
Cyclosporiasis infects the small intestine and usually causes watery diarrhea, with frequent (sometimes explosive) bowel movements. Other symptoms may include loss of appetite, weight loss, bloating, gas, stomach cramps, nausea, vomiting, muscle aches, low-grade fever, and fatigue. Some infected persons may not have any symptoms.

How soon do symptoms appear?
The symptoms generally appear about a week after becoming infected.

How long can an infected person carry *Cyclospora*?
Generally, infected people can pass the parasite in their stool for a few days to a month or longer.

What is the treatment for cyclosporiasis?
A combination of two antibiotics is used to treat cyclosporiasis. People who have diarrhea should rest and drink plenty of fluids.

How can cyclosporiasis be prevented?
- Thoroughly wash hands after toilet visits and before eating or handling food.
- Wash all fruits and vegetables thoroughly, especially those that will not be cooked; however, this practice may not completely eliminate the risk of *Cyclospora*.
- Avoid consuming improperly filtered water from rivers, lakes, water parks, or swimming pools.
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Fact Sheet

What is giardiasis?
Giardiasis is an intestinal illness caused by a one-cell parasite called *Giardia lamblia*. It is a fairly common cause of diarrhea. Cases may occur as a single case, in clusters, or in outbreaks.

Where are *Giardia* parasites found?
*Giardia* parasites are found in infected people (with or without symptoms) and wild or domestic animals including pets such as dogs and cats. Beavers have gained attention as a potential source of *Giardia* contamination of lakes, reservoirs, and streams.

How does this parasite spread?
The *Giardia* parasite is passed in the stool of an infected person or animal and may contaminate water or food. Ingesting the parasite may cause illness. Person-to-person transmission may also occur in households, day care centers, or other settings where hand-washing practices are poor.

Who gets giardiasis?
Anyone can get giardiasis, but it tends to occur more often in people in institutional settings, people in day care centers, parents of infected children, foreign travelers, and individuals who consume improperly treated surface water.

What are the symptoms of giardiasis?
People exposed to *Giardia* may experience mild or severe diarrhea, cramps, and bloating, excessive amounts of gas in the stomach; in some instances no symptoms may be present. Occasionally, some people will have chronic diarrhea over several weeks or months, with significant weight loss. Fever is rarely present.

How soon do symptoms appear?
The symptoms appear 1 – 2 weeks after exposure (average 7 days).

How long can an infected person carry the *Giardia* parasite?
A person can shed the parasite in stool throughout the entire period of infection, from weeks to months.

Should an infected person be excluded from work or school?
People with active diarrhea (e.g., infants, young children, individuals with bowel control/hygiene issues) may need to be excluded from settings such as day care, and occupations such as food handling or direct patient care, until they no longer have diarrhea.

What is the treatment for giardiasis?
Several prescription drugs are available to treat a *Giardia* infection. Treatment of carriers without symptoms is generally not recommended. Some individuals may recover on their own, without medication.

How can giardiasis be prevented?
Some important preventive measures include:
• Carefully wash hands thoroughly after toilet visits and before eating or handling food.
• Wash hands after every diaper change, especially if you work with diaper-aged children, even if you are wearing gloves.
• Avoid consuming water from recreational use areas (e.g., rivers, lakes, ponds) and improperly treated drinking water.
• Avoid sexual practices that involve possible contact with stool.

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Fact Sheet

What is hemolytic uremic syndrome?
Hemolytic uremic syndrome (HUS) is a rare but serious illness that affects the kidneys and blood clotting system. It is more common in children than in adults and may be mild or severe. In severe cases, kidney function is greatly reduced, and dialysis may be necessary. Abnormalities of the blood clotting system can cause a tendency to bleed, and the red blood count may be low (anemia). Transfusions are often needed in severe cases. Fortunately, most people with HUS recover completely, and kidney function returns to normal. However, a prolonged hospital stay is often required.

What causes HUS?
In most cases, HUS is a serious complication of an intestinal Shiga toxin-producing E. coli infection (STEC), especially with E. coli O157:H7.

How soon do symptoms appear?
Symptoms usually appear about 3 to 10 days after the onset of diarrhea. Diarrhea may have resolved, and the case may appear to be improving when the onset of HUS occurs.

How is HUS infection diagnosed?
HUS cannot be diagnosed with a single laboratory test. Physicians use the results of several tests and their medical evaluation to determine if a person has HUS. These include tests of kidney function, blood clotting factors, and blood counts.

What is the treatment for HUS?
There is no known medical treatment that will prevent the development of HUS. Fortunately, the majority of children will not develop this complication. For those that do, supportive treatment is provided for kidney function (dialysis) and blood clotting (transfusions).

How can HUS be prevented?

- Since hamburger and ground beef may be contaminated with STEC known to cause HUS, cook ground beef thoroughly. Ground beef should be cooked to a temperature of 160 degrees F. If a thermometer is not used, the beef should be cooked until the meat is no longer pink, and juices run clear.
- Do not consume raw milk or unpasteurized dairy products.
- Avoid unpasteurized juices.
- Wash your hands after using the bathroom or changing diapers and before preparing or eating food.
- Do not drink or swallow water in lakes, ponds, or streams.
- Prevent cross contamination in food preparation areas by thoroughly washing hands, counters, cutting boards, and utensils after they touch raw meat. Never place cooked hamburgers or ground beef on the unwashed plate that held raw patties. Wash meat thermometers in between tests of patties that require further cooking.
- Wash all fruits and vegetables thoroughly, especially those that will not be cooked – even if they will be peeled.
• Wash your hands immediately after contact with animals (especially cattle) or their environment when visiting farms or petting zoos.

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Fact Sheet

What is hepatitis A?
Hepatitis A is a liver disease caused by the hepatitis A virus.

Where is the hepatitis A virus found?
Hepatitis A is found in the stool of persons infected with hepatitis A.

How does this virus spread?
It is usually spread by putting something in the mouth that is contaminated with the virus. Hepatitis A can be carried on an infected person’s hands and spread by person-to-person contact or by contaminated food or drink.

Who gets hepatitis A?
Anyone can become infected with hepatitis A; however, infection occurs more frequently in school-aged children and young adults.

What are the symptoms of hepatitis A?
Symptoms of hepatitis A infection may include fever, fatigue, poor appetite, diarrhea, and abdominal discomfort. Urine may become darker in color, and jaundice (yellowing of the skin and whites of the eyes) may occur. The disease is rarely fatal. Infants and young children tend to have very mild symptoms and are less likely to develop jaundice than older children and adults. There is no chronic infection with hepatitis A.

How soon do symptoms appear?
The symptoms may appear 15 – 50 days after exposure (average 28 – 30 days).

How long is an infected person able to spread the virus?
The contagious period begins approximately 2 weeks before the symptoms appear and continues for approximately 1 week after the onset of symptoms. Prolonged excretion of virus (up to 6 months) in children and infants has been documented.

What is the treatment for hepatitis A?
There is no specific treatment for hepatitis A. However, people who have been exposed to the hepatitis A virus should receive a shot of hepatitis A vaccine or immune globulin (IG), depending on their age and other medical factors. This treatment may provide protection and minimize symptoms of hepatitis A infection if a person receives it within 2 weeks after exposure to the virus.

How can hepatitis A be prevented?

- Always wash hands after using the bathroom or changing diapers and before preparing or eating food.

- Hepatitis A vaccine is the best protection and is recommended for all children 12 months of age and older in the United States. The vaccine is also recommended (before exposure to hepatitis A virus) for the following persons who are more likely to get hepatitis A virus infection or more likely to get seriously ill if they do get hepatitis A:
Hepatitis A infection

- Travelers to countries with increased rates of hepatitis A (check with your doctor).
- Men who have sex with men.
- Injecting drug users.
- Persons with chronic liver disease.
- Persons with clotting factor disorders (such as hemophilia).

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Fact Sheet

What is listeriosis?
Listeriosis is a serious illness caused by a bacterium called Listeria monocytogenes.

Where are the bacteria found?
The bacteria are found in soil and water. Animals can carry the bacteria without appearing ill.

How do these bacteria spread?
Humans may become infected by eating contaminated foods. Vegetables can become contaminated from the soil or from manure used as fertilizer. Animals can contaminate foods of animal origin such as meats and dairy products. The bacteria have been found in raw foods, such as uncooked meats and vegetables, and in foods that become contaminated after processing, such as soft cheese and cold cuts at the deli counter. Unpasteurized (raw) milk or foods made from unpasteurized milk may contain the bacteria. Babies can be born with listeriosis if their mothers eat contaminated food during pregnancy.

Who gets listeriosis?
The disease affects primarily pregnant women, newborns, the elderly, persons with weakened immune systems, cancer, diabetes, kidney disease, AIDS, and persons who take corticosteroid medications. Healthy adults and children occasionally get infected with Listeria, but they rarely become seriously ill.

What are the symptoms of listeriosis?
Persons infected with Listeria may have fever, muscle aches, and sometimes nausea and diarrhea. Symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can also occur. Infected pregnant women may experience only a mild illness; however, infection during pregnancy can lead to premature delivery, infection of the newborn or even stillbirth.

How soon do symptoms appear?
The symptoms can appear from 3 - 70 days after exposure. In most cases, symptoms develop 3 weeks after exposure.

What is the treatment for listeriosis?
When infection occurs during pregnancy, antibiotics given promptly to the pregnant woman can often prevent infection of the fetus or newborn. Babies with listeriosis receive the same antibiotics as adults, although a combination of antibiotics is often used until physicians are certain of the diagnosis. Even with prompt treatment, some infections result in death. This is particularly likely in the elderly and in persons with other serious medical problems.

How can listeriosis be prevented?
General recommendations include the following:

- Thoroughly cook raw food from animal sources, such as beef, pork, or poultry.
- Wash raw vegetables thoroughly before eating.
Keep uncooked meats separate from vegetables, cooked foods, and ready-to-eat foods.
Avoid raw (unpasteurized) milk or foods made from raw milk.
Wash hands, knives, and cutting boards after handling uncooked foods.

Recommendations for persons at high risk, such as pregnant women and persons with weakened immune systems, in addition to the recommendations listed above:

- Do not eat soft cheeses such as feta, Brie, Camembert, blue-veined cheeses, or Mexican-style cheeses such as queso blanco, queso fresco, and Panela, unless they have labels that clearly state they are made from pasteurized milk.
- Do not eat hot dogs, luncheon meats, or deli meats, unless they are reheated until steaming hot.

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Fact Sheet

What is norovirus?
Norovirus is the most common cause of acute gastroenteritis (infection of the stomach and intestines) in the United States. Norovirus illness spreads easily and is often called “stomach flu” or viral gastroenteritis.

Where are noroviruses found?
These viruses can be found in the vomit or feces of infected people, inanimate objects such as doorknobs and hand rails, but also in food such as produce, shellfish, ready-to-eat foods touched by infected food workers (salads, sandwiches, ice, cookies, fruit), or any other foods contaminated with vomit or feces from an infected person.

How does this virus spread?
Transmission occurs by three routes: person-to-person, foodborne, and waterborne. People who are infected can spread it directly to other people, or can contaminate food or drinks they prepare for other people. The virus can also survive on surfaces that have been contaminated with the virus or be spread through contact with an infected person.

Who gets norovirus?
Humans are the only known reservoir for norovirus. Almost anyone can get foodborne norovirus infection, but the elderly and children under 5 years old may be more susceptible.

What are the symptoms of norovirus?
Diarrhea, vomiting, nausea, and stomach pain are the common symptoms. Diarrhea tends to be watery and non-bloody and is more common in adults. Vomiting is more common in children but both symptoms may occur in either age group.

How soon do symptoms appear?
Symptoms of foodborne norovirus infection usually appear 12-48 hours after eating food that contains the virus.

How long can an infected person carry norovirus?
Typically symptoms last for 1-3 days. Among young children, old adults, and hospitalized patients, it can last 4-6 days. Infected persons are most contagious during the first three days of illness, but may still shed the virus for 21 days or more.

Should an infected person be excluded from school or work?
Since the virus is spread in the feces of infected people, food workers must be excluded for 72 hours after their symptoms stop. Although the person may feel better, they are still infectious and can easily spread the virus and cause others to become ill from the food they prepare or surfaces they touch.

What is the treatment for norovirus?
There is no specific medicine to treat people with norovirus illness. Norovirus infection cannot be treated with antibiotics because it is a viral (not a bacterial) infection. People with norovirus illness should drink plenty of liquids to replace fluid lost from throwing up and diarrhea to prevent dehydration.

How can norovirus infection be prevented?
• Exclude food workers until 72 hours after their symptoms have stopped.
• Discard food prepared by infected food workers.
• Clean and disinfect contaminated hard non-porous environmental surfaces with a chlorine bleach solution of 1,000 - 5000 ppm after an episode of illness.
• Clean and sanitize food preparation equipment and surfaces.
• If you are ill with diarrhea or vomiting, do not cook, prepare, or serve food for others.
• Wash fruits and vegetables and cook oysters and other shellfish thoroughly before eating them.
• Wash clothing or linens soiled by vomit or fecal matter immediately. Remove the items carefully to avoid spreading the virus. Machine wash and dry.
• Practice proper hand hygiene: thorough hand washing at appropriate times and minimizing bare-hand-contact. (However, hand washing is not enough – since hand washing only provides a 2-log reduction of viruses on hands and norovirus is shed in the billions per gram of feces, there will be plenty of virus particles remaining on hands to cause illness).

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Fact Sheet

What is salmonellosis?
Salmonellosis is an illness that is caused by a bacterium called Salmonella. It is a common cause of diarrhea in the United States and one of the most common causes of food poisoning.

Where are Salmonella bacteria found?
Salmonella bacteria may be present in certain food products such as raw meats, raw poultry, unpasteurized milk and cheese products, raw eggs, and in stool of infected persons. Other sources of exposure may include contact with infected reptiles (e.g., snakes, lizards, turtles), pet chicks, dogs, and cats.

How do these bacteria spread?
Salmonella bacteria are spread by eating or drinking contaminated food or water and less often by contact with infected people or animals.

Who gets salmonellosis?
Anyone can get salmonellosis, but it is recognized more often in infants and children.

What are the symptoms of salmonellosis?
People infected with Salmonella may experience mild or severe diarrhea, fever, and occasionally vomiting.

How soon do symptoms appear?
The symptoms generally appear from 12 - 36 hours after exposure (range 6 – 72 hours).

How long can an infected person carry Salmonella?
An infected person can have Salmonella bacteria in the stool for several days to many months. Infants and people who have been treated with oral antibiotics tend to carry the germ longer than others.

Should an infected person be excluded from work or school?
Since Salmonella bacteria are in the stool, people with active diarrhea who are unable to control their bowel habits (e.g., infants, young children, certain handicapped individuals) need to be isolated. Most infected people may return to work or school once diarrhea has stopped, provided they carefully wash their hands after toilet visits. Food handlers should have two negative stools, obtained at least 24 hours apart, before returning to their routine activities.

What is the treatment for salmonellosis?
Most people infected with Salmonella will recover on their own; however, some may require fluids to prevent dehydration. Antibiotics and antidiarrheal drugs are generally not recommended for typical cases.

How can salmonellosis be prevented?
- Always treat raw poultry, beef, and pork as if they are contaminated:
  - Wrap fresh meats in plastic bags at the market to prevent blood from dripping on other foods.
  - Refrigerate foods promptly; minimize holding at room temperature.
Salmonellosis
(Non-Typhoidal Salmonella infection)

- Cutting boards and counters used for preparation should be washed well immediately after use to prevent cross contamination with other foods.
- Ensure that the correct internal cooking temperature is reached – particularly when using a microwave.

- Avoid eating raw or undercooked meats.
- Avoid drinking or using raw milk.
- Avoid eating raw eggs, uncooked foods with raw eggs (i.e. cookie dough), or undercooked foods containing raw eggs.
- Encourage careful hand washing before and after food preparation.
- Make sure children, particularly those who handle pets, carefully wash their hands.
- Reptiles, or objects from reptile tanks, should not have contact with food preparation surfaces or play areas for young children.

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Fact Sheet

What are Shiga toxin-producing strains of *Escherichia coli*?
*Escherichia coli* (*E. coli*) is a bacterium. Although most strains of this bacterium are harmless, some strains produce a powerful toxin that can cause illness. These strains are called Shiga toxin-producing *E. coli* (STEC). The most common STEC strain in North America is *E. coli* O157:H7.

Where are STEC bacteria found?
STEC bacteria are normally found in the intestines of cattle; however, other animals such as deer may also carry STEC.

How do these bacteria spread?
Because these bacteria are normally found in cattle, contamination of meat (especially ground beef) may occur during the slaughtering process. Eating contaminated meat that has not been thoroughly cooked can cause illness. In addition, outbreaks have been associated with consuming raw milk, unpasteurized apple cider, contaminated water, sprouts, lettuce, salami, and venison. Transmission also occurs directly from person-to-person, especially in families and in high-risk settings like daycare centers.

Who gets STEC infections?
Although anyone can get infected, the highest infection rates are in children less than 5 years of age. The elderly are also at increased risk for infection.

What are the symptoms?
Typical symptoms can include abdominal cramping, watery diarrhea, frequently bloody, vomiting, and a low-grade fever. Symptoms usually resolve over several days. Some individuals may experience no symptoms at all. The infection can cause a serious complication known as hemolytic uremic syndrome (HUS), especially in young children, in which the red blood cells are destroyed and the kidneys fail. Adults may also develop a similar complication along with neurologic symptoms, known as thrombotic thrombocytopenic purpura (TTP). These complications can occur in up to 10% of cases.

How soon do symptoms appear?
The symptoms generally appear 3 to 4 days after the exposure (range 2 – 8 days).

Should an infected person be excluded from school or work?
Young children in day-care settings known to have STEC should be removed from the day-care facility until two consecutive stool specimens have tested negative. School-aged children who have recovered from their illness may attend school. Persons who are employed as food handlers, health care workers, or childcare providers should also be excluded until they have two negative stool specimens.

What is the treatment for STEC?
Most people recover without any specific treatment. There is no evidence that antibiotic treatment is helpful. Antidiarrheal agents are also not recommended. Severe complications, such as HUS, usually require hospitalization.
How can STEC infections be prevented?

- Cook ground beef thoroughly. Ground beef should be cooked to a temperature of 160 degrees F. If a thermometer is not used, the beef should be cooked until the meat is no longer pink and juices run clear.
- Do not consume raw milk or unpasteurized dairy products.
- Avoid unpasteurized juices.
- Wash your hands after using the bathroom or changing diapers and before preparing or eating food.
- Do not drink or swallow water in lakes, ponds, or streams.
- Prevent cross contamination in food preparation areas by thoroughly washing hands, counters, cutting boards, and utensils after they touch raw meat. Never place cooked hamburgers or ground beef on the unwashed plate that held raw patties. Wash meat thermometers in between tests of patties that require further cooking.
- Wash all fruits and vegetables thoroughly, especially those that will not be cooked – even if they will be peeled.
- Wash your hands immediately after contact with animals (especially cattle) or their environment when visiting farms or petting zoos.

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Fact Sheet

What is shigellosis?
Shigellosis is a fairly common illness affecting the intestinal tract. It is caused by a bacterium called *Shigella*. Most cases are seen in the summer and early fall and occur as single cases or outbreaks.

Where are *Shigella* bacteria found?
*Shigella* can be found in the intestinal tract of infected people who in turn may contaminate food or water.

How do these bacteria spread?
*Shigella* bacteria are spread by eating or drinking contaminated food or water or by direct contact with an infected person. Infection may occur after ingestion of very few (10-100) organisms.

Who gets shigellosis?
Anyone can get shigellosis, but it is recognized more often in young children. Those who may be at greater risk include children in day care centers, foreign travelers to certain countries, institutionalized people, and active homosexuals.

What are the symptoms of shigellosis?
People infected with *Shigella* may experience mild or severe diarrhea often with fever, nausea, and sometimes cramps and vomiting. Traces of blood or mucous in the stool can be found in typical cases. Some infected people may show mild illness or no symptoms.

How soon do symptoms appear?
The symptoms usually appear 1 – 3 days after exposure (range 12 – 96 hours).

How long can an infected person carry *Shigella*?
People can pass *Shigella* in their stool for up to 4 weeks. Certain antibiotics may shorten the carrier phase.

Should an infected person be excluded from school or work?
Since *Shigella* is passed in the stool of an infected person, those with active diarrhea or those who are unable to control their bowel habits should be excluded from work or school. Most infected people may return to work or school after the diarrhea ends, provided they carefully wash their hands after toilet visits. Because of the extremely small infective dose, food handlers and persons who provide direct patient care should have two consecutive negative stool samples before returning to regular work activities. Day care attendees should receive antimicrobial therapy and should not return to the day care center until the diarrhea has ceased and two consecutive stool samples are negative for *Shigella*.

What is the treatment for shigellosis?
Most people with shigellosis will recover on their own. Some may require fluids to prevent dehydration. Antibiotics are occasionally used to treat severe cases or to
shorten the carrier phase which may be important for food handlers, children in day care, or institutionalized individuals.

**How can shigellosis be prevented?**
- Wash hands with soap and water carefully and frequently, especially after going to the bathroom, after changing diapers, and before preparing foods or beverages.
- Dispose of soiled diapers properly; disinfect diaper-changing areas after using them.
- Keep children with diarrhea out of child care settings.
- Persons with diarrhea should not prepare food for others.
- Avoid sexual practices that result in contact with feces.

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Fact Sheet

What is Staphylococcal food poisoning?
Staphylococcal foodborne intoxication is caused by the bacteria *S. aureus*. Some strains are capable of producing a highly heat-stable protein toxin that causes illness in humans.

Where are *S. aureus* bacteria found?
*S. aureus* is commonly found in meat and meat products; poultry and egg products; salads such as egg, tuna, chicken, potato, and macaroni; bakery products such as cream-filled pastries, cream pies, and chocolate éclairs; sandwich fillings; and milk and dairy products. Foods that require considerable handling during preparation and that are kept at slightly elevated temperatures after preparation are frequently involved in staphylococcal food poisoning.

How do these bacteria spread?
*S. aureus* produces dangerous toxins which when ingested cause staphylococcal intoxication.

Who gets Staphylococcal food poisoning?
All people are believed to be susceptible to this type of bacterial intoxication; however, intensity of symptoms may vary.

What are the symptoms of Staphylococcal food poisoning?
Persons who consume food contaminated with staph toxin may experience a sudden onset of severe nausea, cramps, vomiting and prostration that is often accompanied by diarrhea and hypotension. Death from staphylococcal food poisoning is very rare, although such cases have occurred among the elderly, infants, and severely debilitated persons.

How soon do symptoms appear?
Symptoms generally appear 2-4 hours after consuming food with staph toxin (range 30 minutes to 8 hours).

Should an infected person be excluded from work or school?
Yes if vomiting and diarrhea are present. Person experiencing these symptoms should be out of these environments until 24 hours have passed since symptoms have ended. Also, temporarily excluding people with boils, abscesses and other purulent lesions of hands, face, or nose from food handling is advised.

What is the treatment for Staphylococcal food poisoning?
No specific treatment indicated. Fluid replacement when indicated.

How can Staphylococcal food poisoning be prevented?
• Educate food handlers about: a) strict food hygiene, sanitation and cleanliness of kitchens, proper temperature control, hand washing, cleaning of fingernails; b) the danger of working with exposed skin, nose, and eye infections and uncovered wounds.

• Reduce food-handling time (from initial preparation to service) to a minimum, no more than 4 hours at ambient temperature. If they are to be stored for more than 2 hours keep perishable foods hot (above 140°F) in shallow containers and covered.

• Temporarily exclude people with boils, abscesses and other purulent lesions of hands, face or nose from food handling.
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Fact Sheet

What is trichinosis?
Trichinosis is an illness caused by a very small parasite called *Trichinella spiralis*. 

Where is the parasite found?
Animals such as pigs, dogs, cats, horses, rats, and many wild animals including, wolf, bear, fox, and some sea mammals such as walrus carry the parasite.

How does the parasite spread?
The usual source of human infection is eating raw or undercooked meats, particularly pork, but horsemeat and wild animal meat can also be sources. The disease does not spread from person-to-person.

Who gets trichinosis?
Anyone who eats undercooked meat of infected animals can develop trichinosis.

What are the symptoms of trichinosis?
Nausea, diarrhea, vomiting, fatigue, and abdominal discomfort are the first symptoms of trichinosis. Headache, fever, chills, cough, eye swelling, aching joints and muscle pains, itchy skin, or constipation follow the first symptoms. If the infection is severe, patients may experience difficulty coordinating movements, and have heart and breathing problems.

How soon do symptoms appear?
Abdominal symptoms can occur 1 - 2 days after infection. Further symptoms usually occur 8-15 days after eating contaminated meat.

What is the treatment for trichinosis?
Several safe and effective prescription drugs are available to treat trichinosis.

How can trichinosis be prevented?
- Cook all fresh pork, pork products, and meat from wild animals at a temperature and for a time sufficient to allow all parts to reach at least 160°F.
- Freeze pork less than 6 inches thick for 20 days at 5°F to kill any parasites. Freezing wild game meats, unlike freezing pork products, even for long periods of time, may not kill all parasites.
- Cook all meat fed to pigs or other wild animals.
- Do not allow pigs to eat uncooked carcasses of other animals, including rats, which may be infected with parasites.
- Clean meat grinders thoroughly if you prepare your own ground meats.
- Curing (salting), drying, smoking, or microwaving meat does not always kill the parasites.
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Fact Sheet

What is typhoid fever?
Typhoid fever is a bacterial illness caused by a unique strain of *Salmonella* called *Salmonella typhi* (*S. typhi*). This bacterium affects the intestinal tract and occasionally the bloodstream. Most cases reported in the United States are acquired during foreign travel to underdeveloped countries.

Where are *S. typhi* bacteria found?
*S. typhi* can be found in people.

How do these bacteria spread?
*S. typhi* bacteria are passed in the stool and, to some extent, the urine of infected people. The bacteria are spread by eating or drinking water or foods contaminated by stool from an infected individual.

Who gets typhoid fever?
Anyone can get typhoid fever but the greatest risk exists to travelers visiting countries where the disease is common. Occasionally, local cases can be traced to exposure to a person who is a chronic carrier.

What are the symptoms of typhoid fever?
Persons with typhoid fever usually have a sustained fever as high as 103° to 104° F. They may also feel weak, or have stomach pains, headache, or loss of appetite. In some cases, patients have a rash of flat, rose-colored spots. Relapses are common. Fatalities are less than 1 percent with antibiotic treatment.

How soon do symptoms appear?
Depending on the size of the infecting dose, symptoms generally appear from 8 – 14 days after exposure (range 3 days to 1 month).

How long can an infected person carry the typhoid bacteria?
The carrier stage varies from a number of days to years. Only about 3% of cases become lifelong carriers of the bacteria, and this tends to occur more often in adults than in children.

Should an infected person be excluded from work or school?
Except for people in high-risk occupations/settings (food workers, health care providers, day care attendees), most infected people may return to work or school when they have recovered, provided that they carefully wash hands after toilet visits.

How is typhoid fever treated?
Specific antibiotics are often used to treat cases of typhoid fever.

What can be done to prevent the spread of typhoid fever?
A vaccine is available; however, it is generally reserved for people traveling to underdeveloped countries where significant exposure may occur. Strict attention to food and water precautions while traveling to such countries is the most effective prevention method.
Typhoid/paratyphoid fever (Salmonella typhi/paratyphi infection)

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Fact Sheet

What are noncholera *Vibrio*?
Noncholera *Vibrio* are bacteria in the same family as those that cause cholera.

Where are noncholera *Vibrio* bacteria found?
Noncholera *Vibrio* bacteria live in saltwater and are commonly found in marine environments and estuaries. These bacteria are frequently isolated from oysters and other shellfish during the summer months.

How does this bacteria spread?
Noncholera *Vibrio* can cause disease in people who eat contaminated seafood or have an open wound that is exposed to seawater. There is no evidence for person-to-person transmission of noncholera *Vibrio*.

Who gets infected with noncholera *Vibrio*?
Persons who are immunocompromised, especially those with chronic liver disease, are at risk for noncholera *Vibrio* infection when they eat raw seafood, particularly oysters. Since noncholera *Vibrio* are naturally found in warm marine waters, people with open wounds can be exposed to noncholera *Vibrio* through direct contact with seawater.

What are the symptoms of noncholera *Vibrio* infection?
Among healthy people, ingestion of noncholera *Vibrio* can cause vomiting, diarrhea, and abdominal pain. In immunocompromised persons, particularly those with chronic liver disease, noncholera *Vibrio* can infect the bloodstream, causing a severe and life-threatening illness.

Noncholera *Vibrio* can also cause an infection of the skin when open wounds are exposed to warm seawater. These infections may lead to skin breakdown and ulceration.

How soon do symptoms appear?
Symptoms usually occur within 24 hours of eating contaminated food or within 12 to 72 hours after exposure to contaminated seawater.

What is the treatment for noncholera *Vibrio* infection?
Patients with diarrhea should drink plenty of liquids to replace lost fluids. In severe illnesses, (e.g., bloodstream or wound infection) antibiotics may be used.

How can this infection be prevented?
Some tips for preventing noncholera *Vibrio* infections, particularly among immunocompromised patients, including those with underlying liver disease:

1. Do not eat raw oysters or other raw shellfish.
2. Cook shellfish (oysters, clams, mussels) thoroughly:
   - For shellfish in the shell, either a) boil until the shells open and continue boiling for 5 more minutes, or b) steam until the shells open and then continue cooking for 9 more minutes. Do not eat those shellfish that do not open during cooking.
   - Boil shucked oysters at least 3 minutes or fry them in oil at least 10 minutes at 375°F.
3. Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
4. Eat shellfish promptly after cooking and refrigerate leftovers.
5. Avoid exposure of open wounds or broken skin to warm salt or brackish water and raw shellfish harvested from such waters.
6. Wear protective clothing (e.g., gloves) when handling raw shellfish.

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Fact Sheet

What is yersiniosis?
Yersiniosis is an illness that is caused by the bacterium called *Yersinia enterocolitica*. It generally affects the intestinal tract. It is a relatively uncommon illness and usually occurs as a single isolated case. Occasional outbreaks have been reported due to a common exposure.

Where are *Yersinia* bacteria found?
Animals, especially pigs, are the main source of *Yersinia*. Fecal wastes from animals may contaminate water, milk, and foods and become a source of infection for people or other animals.

How do these bacteria spread?
*Yersinia* bacteria are spread by eating contaminated food, especially raw or undercooked pork products. The preparation of raw pork intestines (chitterlings) may be particularly risky. Infants can be infected if their caretakers handle raw chitterlings and then do not adequately clean their hands before handling the infant or the infant’s toys, bottles, or pacifiers. Drinking contaminated unpasteurized milk or untreated water can also transmit the infection. On rare occasions, it can be transmitted as a result of the bacterium passing from the stools or soiled fingers of one person to the mouth of another person.

Who gets yersiniosis?
Any person can get yersiniosis, but it occurs more often in children.

What are the symptoms?
Infected people may experience mild or severe diarrhea, fever, and abdominal cramps. Sometimes, *Yersinia* infection may mimic appendicitis.

How soon do symptoms appear?
Symptoms generally appear 4 to 7 days after exposure.

How long can an infected person carry the germ?
The bacteria are passed in the feces during the time the person is experiencing diarrhea and in some cases for a few weeks or months afterward.

How is yersiniosis treated?
Most cases recover without treatment. Those with severe symptoms or bloodstream infections are generally treated with antibiotics.

How can yersiniosis be prevented?
- Avoid eating raw or undercooked pork.
- Drink only pasteurized milk or milk products.
- Wash hands with soap and water before eating and preparing food, after handling raw meat, and after contact with animals.
- After handling raw chitterlings, clean hands and fingernails with soap and water before touching infants or their toys, bottles, or pacifiers.
- Carefully clean all cutting boards, counter tops, and utensils with soap and hot water after preparing raw meat.
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