NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES
Division of Public Health

Environmental Health Section Foodborne Outbreak Response Guidelines



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Table Of Contents

Appendix

North Carolina Environmental Health Section Foodborne Outbreak Response Guidelines

This guideline provides comprehensive information about outbreak investigation from the Council to Improve Foodborne Outbreak Response (CIFOR) and reliable sources to help local and state health agencies mitigate the spread of foodborne illnesses and take actions to protect the public.

Foodborne Illness General Information

- Despite continuous preventive measures, foodborne illness is still a significant public health threat in the United States that warrants prompt and immediate attention by the local health department (LHD).
- According to Centers for Disease Control and Prevention (CDC), Norovirus causes 19-21 million illnesses each year, 56,000-71,000 hospitalizations and 570-800 deaths annually.
- CDC data shows that Norovirus is a very contagious virus that causes 58% of foodborne illnesses within the United States causing diarrhea, vomiting, nausea, and stomach pain.
- Norovirus outbreaks occur year-round but are most common from November to April.

I. Standard Operating Procedure (SOP) and Epi Kit

It is practical to have an informed investigative team that is trained and experienced in carrying out the basic functions in place before a foodborne illness is reported. In the event of an outbreak, a ***standard operating outbreak procedure*** (SOP) should be available, including food sampling guidelines to help avoid any unnecessary confusion, and to help guide the investigative team with duties and responsibilities. Review the SOP on a scheduled routine basis to ensure team members are aware of their roles and that communication remains clear and open. Before the investigative team heads into the field, an ***epi kit*** with equipment and forms should be on hand and ready to go. At a minimum, the foodborne illness outbreak epi kit should contain the following items:

- ***Pens/Paper/Pencil***
- ***Investigation guidelines***
- ***Investigative forms***
- ***Foodborne illness standard questionnaires and templates***
- ***Properly calibrated temperature-measuring device***
- ***Agency and laboratory phone numbers and contacts***
- ***Disinfection and sterilizing agents***
- ***Alcohol swabs***
- ***Hand sanitizer***
- ***Sterile specimen containers (unexpired)****
- ***Sterile wrapped sampling spoons****
- ***Large cooler/ Blue ice packs***
- ***Sterile gloves***
- ***Nonsterile zip-lock bags***

**Or have access to specimen collection materials through agreement with lab or other arrangement*

In addition to maintaining the SOP and epi kit, it is also important to consider the following prior to an outbreak:

- ✓ ***Make*** yourself knowledgeable about the most common foodborne illnesses and pathogens by including a library of information on enteric diseases and foodborne references.
- ✓ ***Identify*** a team leader who is an effective communicator and works well with others.
- ✓ ***Establish*** and implement a manual for outbreak investigations for the office that includes an easy-to-read flow chart on procedures and contact information of other agencies likely to be involved.
- ✓ ***Communicate*** and ***coordinate*** with other agencies to establish contacts in advance of a potential outbreak.
- ✓ ***Consult*** in advance with individuals in the laboratory concerning protocols for collecting, shipping, labeling, and other details of food and human biological samples.

II. Overview of a Foodborne Illness Outbreak and Response

A series of events occurs before public health officials can report that an illness case is linked to an outbreak. Foodborne illness concerns or food-related complaints are often reported directly to the health department via phone call, fax, or e-mail. The CDC developed the 7-steps to an outbreak investigation as an effective multifaceted approach to investigating foodborne outbreak. Foodborne illness investigations are often dynamic, and several steps to the investigation may occur at the same time as shown in **Figure 1.** By identifying the source of the outbreak, control measures can be implemented to prevent further spread of the illness as well as proper documentation and after-action meetings to identify areas for improvement, enhance future interactions with the epidemiology (Epi) team, and promote long-term compliance with risk factors.

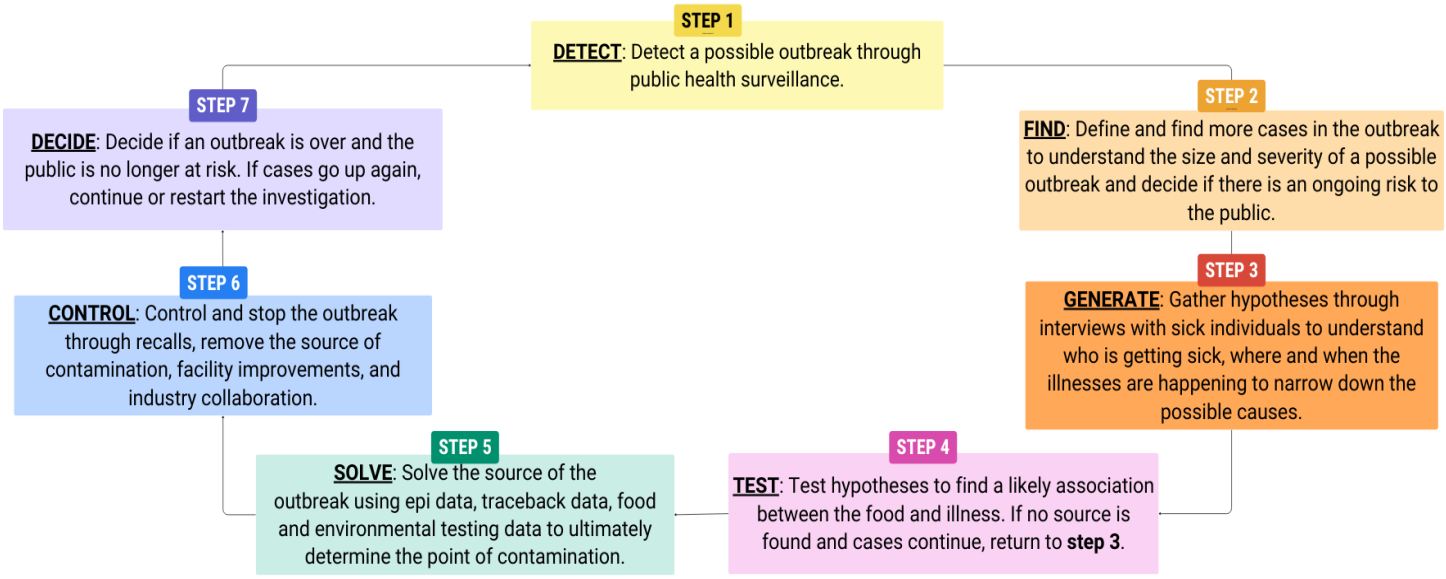

Figure 1. *7-Steps in a foodborne outbreak investigation*

III. P.I.E. the Escalation and De-escalation

It is necessary to develop and maintain a foodborne outbreak contingency plan to implement all parts of the investigation team's plans and procedures. The plan should include all criteria that have been identified that would trigger excess use of resources and identify resources that are available for quick access or for when an outbreak extends for a long duration. Finally, the plan should also expand on the established memorandums, procedures, communication strategies, foodborne illness outbreak protocols, as well as the agencies involved with their current contact information. Additional measures for improving performance are shown in **Figure 2** to thoroughly define actions that each stakeholder can take to prepare for a foodborne outbreak.

Prepare	Identify	Establish
Ensure foodborne outbreak investigation team plans and procedures are updated regularly.	Determine jurisdiction due to investigations requiring management in multiple jurisdictions.	Establish Memorandums, Mutual Aid, and other agreements.
Plan and coordinate with all other agencies that may be drawn into the investigation and response over time.	Identify criteria (triggers) used to provide excessive usage of agency resources.	Establish agencies involved in foodborne illness outbreak investigation
Plan and implement trainings from the Incident Command System (ICS) principles, and assist in obtaining supplies and equipment.	Identify useful resources for developing relationships and plans to facilitate quick access to these resources should the need arise.	Establish contact list with those involved within the foodborne outbreak investigation

Figure 2. *Foodborne Outbreak Escalation and De-escalation Practices*

IV. Communication and Information Sharing

Maintaining open communication and sharing of information for public health–related events are important. Open communication can also help prevent misinformation, rumors, and panic during an outbreak. Because foodborne illnesses often cross jurisdictional boundaries, it is important to establish relationships with key stakeholders in other cities, county, regional, and state agencies beforehand. For this reason, CDC's Epidemic Information Exchange (Epi-X) serves as a tool that provides rapid communication that connects public health professionals whenever there is a need to exchange preliminary information and respond to health threats. Local Health Departments can also use other reliable communication channels, such as websites, social media, newsletters, press releases, and meetings to disseminate information.

V. Local Health Department Roles

Local health departments (LHDs) must anticipate the need to rapidly expand after receiving and responding to complaints of illness directly from the public. Foodborne outbreak investigations are conducted through collaboration between public health staff from Communicable Disease, Public Health Laboratory, and Environmental Health (EH) disciplines as specified within **Figure 3**. The Communicable Disease team will likely involve public health nurses, communicable disease investigators, and epidemiologists. This group takes the lead in interviewing cases and their contacts, collecting patient data from health care providers and hospitals, while analyzing and interpreting epidemiological data. They also collect and analyze data or collaborate with a statistician.

Environmental Health Specialists (EHS) inspect physical facilities such as restaurants that may be involved in the investigation, interview staff at those facilities, gather information about commercial products and how foods are prepared and handled at a restaurant or other food facility, and obtain samples for testing. Environmental Health Departments may receive the initial illness complaints from restaurant patrons. EH also works with the food establishment on any cleaning, maintenance, or other control measures that are needed during the outbreak. Personnel from the public health laboratory, usually including microbiologists and laboratory technicians analyze both environmental and microbiological specimens collected from food, water, and people. These divisions work hand in hand through collaborations, coordination, and communication with each other, as well as other public health partners within the state and federal levels to mitigate risks associated with foodborne outbreaks and eventually conduct after-action reviews to improve investigation effectiveness and prevent future outbreaks from the same causes.

Environmental Health (EH) Services	Communicable Diseases / Epidemiology	Public Health Laboratory
• Investigates foodborne illness complaints. • Performs environmental investigations to identify contributing factors, including evaluating food preparation practices, observing food flow procedures, and collecting documents on sources of food for traceback. • Assists in identification and interview of ill food handlers. • Collects food and environmental samples. • Provides education to food establishment management and staff on topics including safe food handling and storage, proper cleaning and disinfection, monitoring ill employees and sick leave, and proper documentation of establishment procedures.	• Performs epidemiological investigations to identify the etiologic agent, persons at risk, size and scope, mode of transmission, and source of the outbreak. • Conducts disease surveillance. • Restricts ill food handlers. • Collects human specimens, as needed. • Informs the public, media, and healthcare providers, as needed.	• Provides guidance on collection, storage, and shipment of patient specimens and food/environmental samples. • Performs laboratory analyses of patient specimens and food/environmental samples. • Helps interpret test results

Figure 3. *Local Health Department roles and responsibilities*

VI. State and Federal Agencies

A foodborne disease outbreak may be managed solely by one local agency or may become the shared responsibility of multiple local, state, and federal agencies. Factors of the outbreak, including the type of pathogen, number and location of affected people, geographic jurisdictions involved, and local and state food safety rules and laws, will determine the types of agencies that need to be involved. The state agencies within the North Carolina Department of Health and Human Services, Division of Public Health involved in foodborne outbreak investigations are, but not limited to:

1. **Environmental Health Section** — protects people by promoting a safe and healthy environment in partnership with private businesses and public agencies through consistent application of education, best practices, and compliance monitoring.
2. **Public Health Preparedness and Response** — provides aid in major emergency response operations such as natural disasters, intentional contamination, and any outbreak or response requiring deployment of resources.
3. **Communicable Disease Branch** — provides routine surveillance of diseases, assists in investigating outbreaks, and assists in communication sharing between local, state, and federal public health agencies, private physicians, and hospital and occupational infection control personnel.

State, local public health, and agriculture partners work closely with CDC during multistate outbreak investigations. Some of their tasks, which are essential for the investigation are to:

- ***Interview*** people about the foods they ate before getting sick.
- ***Collect*** food from sick people's homes or stores for testing.
- ***Conduct*** traceback to identify where the contaminated food came from.

VII. Outbreak and Control Team

Once a foodborne outbreak is confirmed, it is vital that the key personnel of an outbreak investigation and control team are involved. An outbreak investigation and control team within North Carolina will consist of a Team Lead, Epidemiologist, Environmental Health Specialists, *Laboratory/ North Carolina Department of Agriculture & Consumer Services (NCDA) as needed,* and Public Information Officer as shown in **Figure 4**. The core team should be involved in all outbreak investigation, serving as the focal point for organizing multidisciplinary and/or multiagency tasks, and enabling the development of effective working relationships with external partners and advanced expertise among staff. The core team will also develop a case definition to determine which individuals will be included in the outbreak. Anytime more than one group is involved in working on an outbreak investigation, the investigation becomes more complicated, and communication becomes even more important.

If the source of contamination occurs prior to the point of retail food preparation (e.g. manufacturer, supplier, distributor, etc.), the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) has investigative jurisdiction. The NCDA & CS may also collaborate with the US Department of Agriculture (USDA)-Food Safety and Inspection Services (FSIS) and/or the US Food and Drug Administration (FDA). As the outbreak investigation and control team members compile detailed data and information gathered from the outbreak, the team should be able to identify what went wrong to ensure that future similar events can be prevented. Other entities from the local and state agencies can be brought in to identify the source(s) of the exposure so that public health action can be taken to establish control measures that can mitigate the spread of disease.

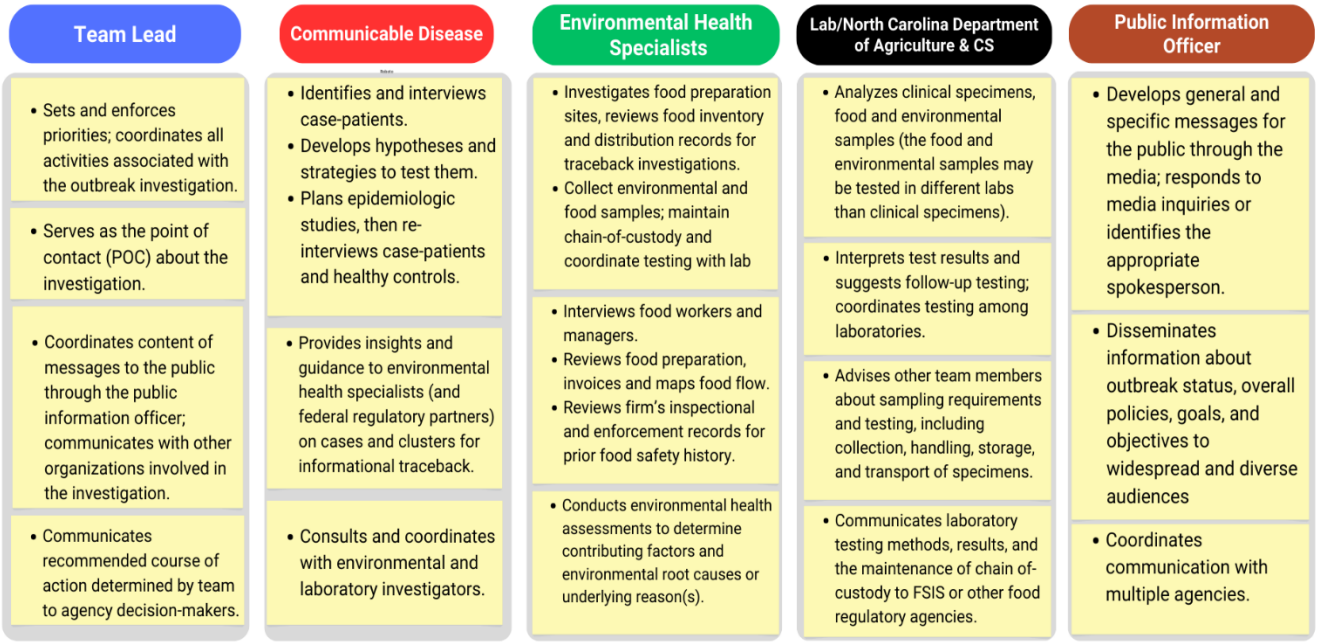

Figure 4. *Outbreak Investigation and Control Team*

VIII. The 10-Step Approach to Outbreak Investigations

Epidemiologists use an organized, multistep approach to field investigations. Although the steps illustrated in **Figure 5** are in numeric order, they might be conducted out of order or at the same time to meet the demands of the investigation. The first step of identification of the investigation team and resources may include the local epidemiology teams, state communicable disease branch epidemiologist/subject matter experts, nurse consultants, Public Health Emergency Response Strike (PHRST) teams, disease investigation specialists (DIS), UNC Epi-Aid, CDC, and many others. Step two is the confirmation or verification of the diagnosis to the extent possible, addressing the problem that was reported initially and ruling out misdiagnosis and potential laboratory error. Step 3 is the determination of the existence of an outbreak. This step is often a difficult step that should be completed before committing program resources to a full-scale investigation. To confirm the existence of an outbreak, the field investigation team must first compare the number of cases during the suspected outbreak period with the number of cases that would be expected during a non-outbreak timeframe.

The goal of creating case definition within step 4 is to identify, or establish, as many cases as possible without including non-cases. Step 5 then arranges and positions the data in terms of time, place, and person. By doing so, the data translates from the line listing into a basic epidemiologic explanation of the outbreak. This description, often referred to as descriptive epidemiology, describes the outbreak in terms of time, place, and person (an in-depth explanation provided within the next section). Step 6 considers whether control measures can be implemented. In concept, control measures are implemented only after the preceding and subsequent steps—including developing and testing hypotheses about the cause or mode of spread—have been implemented. Control measures should be considered again after more systematic studies are complete.

As the process continues, step 7 expands on how to develop and test hypotheses about the disease-causing agent, source or reservoir of the agent, transmission mode, and risk factors for diseases based on descriptive epidemiologic findings resulting from analysis of the line listing of identified affected patrons, information obtained from interviews of individuals or groups of affected people using structured questionnaires or open-ended questioning. Step 8 expands on implanting controls and preventative measures. At this stage of most epidemiologic field investigations, the purposes of systematic or other studies might include improving the quality numerators or denominators causing the investigation's conclusions about the problem. Evaluating the impact of control measures is essential; therefore, step 9 communicates the findings for implementing and evaluating control and prevention measures. The information provided helps keep the public and stakeholders informed as well as provides informed decisions about actions to stop the outbreak, and documentation of the investigation. The final step is to maintain surveillance to prevent additional outbreak-associated with disease or death.

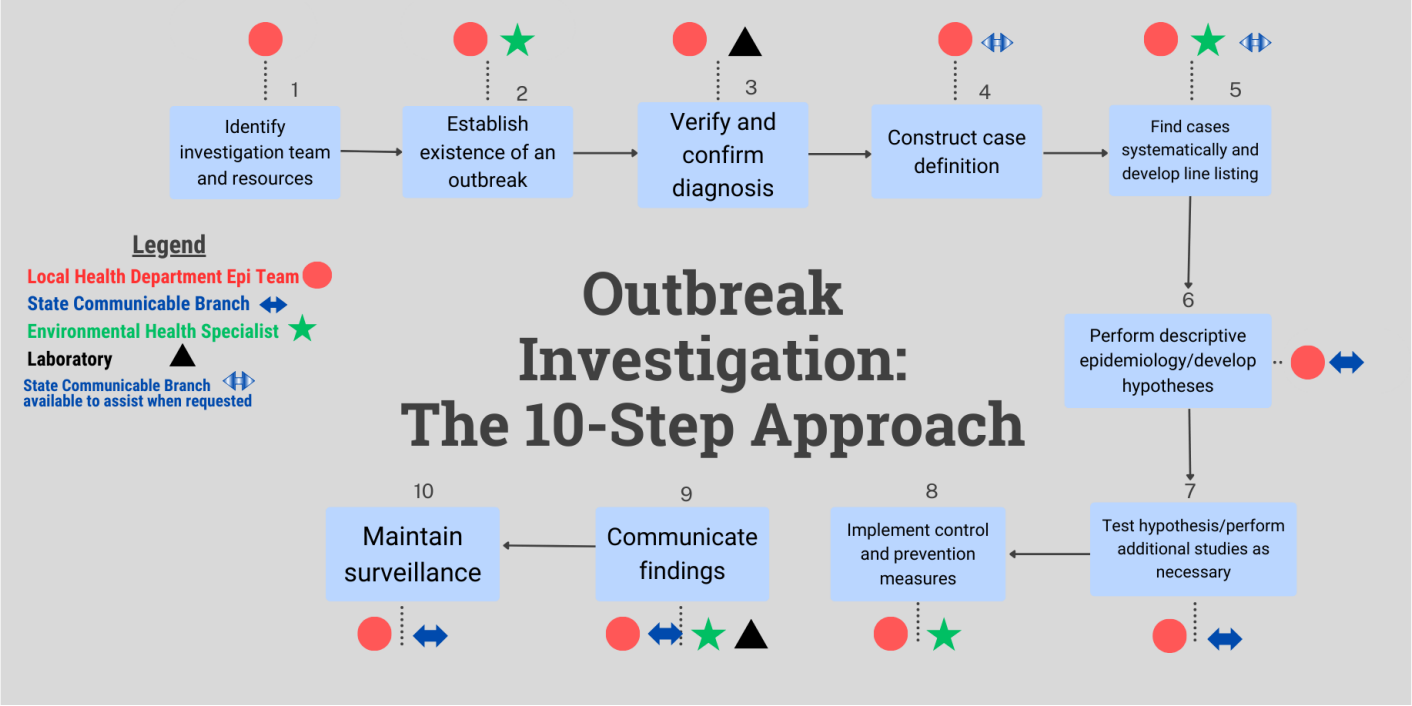

Figure 5. *Outbreak Investigation: The 10-Step Approach*

IX. Investigation Description and Analysis

It is important to establish that the outbreak is real by examining how the cases were diagnosed and by determining what the baseline rate of disease was previously. An effective outbreak investigation describes the who, where, and what of a foodborne outbreak. The ***who*** can describe the age, gender, race, clinical signs, symptoms, and asks how many cases and death have occurred. Finding sick people associated with the outbreak is important to help public health officials understand the size and seriousness of a possible multistate outbreak and decide if there are ongoing risks to the public. After determining the ***who***, it is important to describe the ***where***. The ***where*** can help in determining the epidemiological profile of an area to verify the extent of the outbreak (i.e., park, restaurant, school, etc.).

With the descriptive epidemiology and through systematic review of data in the line listing, key actions typically involved are drawing the epidemic curves, constructing spot maps or other special spatial projections, and comparing groups of people. These key actions contribute to developing initial hypotheses for explaining the potential cause, source, and mode of spread of the outbreak's causative agent(s). Establishing the time of the outbreak or epidemic requires collecting information about key events identified during the creation of the line listing or through other inquiry, including the time of onset of illness (symptoms, signs, or laboratory test positivity) among affected people; period of likely exposure to the causal agent(s) or risk factor(s); time when treatments were administered or control measures were implemented; and time of potentially related events or unusual exposures. The information collected is used to describe the demographic characteristics (e.g., age, sex, and race/ethnicity), occupation, diagnoses, and features shared by affected patrons to develop preliminary estimates of rates of illness in relation to demographic, exposure, and other characteristics. Additional outbreak information infographic questions obtained from the World Health Organization (WHO) in **Figure 6** should be considered to assist in describing and analyzing the outbreak.

Figure 6. *World Health Organization's outbreak infographics*[1]

X. Verify and Confirm Diagnosis

One of the first tasks that should be considered before heading into the field is to verify the existence of the outbreak. This is done by gathering information and verifying the diagnosis of clinical findings of any reported cases through hospitals, laboratories, physicians, or other reports. This is important to ensure the disease has been properly identified and rule out laboratory error as the basis for the increase in reported cases.

To confirm the diagnosis, it is important that the individual making the reported complaint be interviewed. The data and information gathered from the interview process are critical as they provide the ideal opportunity to identify a common location or activity. The interview also provides the chance to get the list of items that the individual was exposed to and an estimate incubation period. This can be done either over the phone or by talking directly face to face with those involved in the outbreak. The interview is critical to helping provide clues to the clinical descriptions of the illness and useful for developing the hypotheses. It can help answer questions about exposure and what could have caused the illness or help with finding other individuals that may have been exposed as well.

XI. Environmental Health Specialist (EHS)

Verifying a situation is a collaborative effort, and it is not an effort that should be performed alone because it requires a lot of input from a variety of sources. The EHS works in collaboration with many partners to determine the existence of an outbreak, find cases, identify the cause, and implement control measures. The main responsibilities of the EH investigation rest firmly on the EHS and that person's knowledge of food safety and control measures needed to facilitate the prevention and spread of further illness. Although the relevant roles of an EHS may vary by scenario, these investigations typically involve the following:

- ***Describe*** the suspected food agent.
- ***Observe*** food handling procedures that may have contributed to contamination of the suspected food agent.
- ***Interview*** food workers and managers.
- ***Take*** temperatures of food storage devices and other relevant measurements
- ***Create*** a food flow chart for the suspected food agent, including details about storage, preparation, cooking, cooling, reheating, and service to identify opportunities for contamination, survival, and proliferation of pathogens.
- ***Collect*** specimens from food, the food handling environment, or people in contact with the suspected food agent.
- ***Collect*** and ***review*** invoices or other documents describing the source of the suspected food agent.

XII. Environmental Health (EH) Assessments

Environmental health assessments are an important part of outbreak investigations. Food safety programs can use environmental assessments to respond to outbreaks of foodborne illness and make recommendations for prevention. Environmental Health Specialists usually conduct assessments by evaluating the food safety system to understand and address what happened to cause the outbreak and the root causes of the outbreak through engagements with epidemiologist and laboratory to assess all aspects of the food safety system. Through it all, the primary goal of an EH assessment at a food establishment is to identify the source of illness and prevent further illness by identifying and removing contaminated products from distribution/sale, identifying, and correcting improper food handling, food production, food storage, and employee health practices, as well as developing and improving food safety procedures and policies.

XIII. Conducting the Field Investigation

Environmental field investigation should be performed if the epidemiological investigation suggests a common source exposure such as consumption of food or water at a particular food service establishment or gathering. The exposure, onset of symptoms, and risk factors associated with the illness and other known data, collected by the local EPI Team or Communicable Disease Nurse may help develop an initial hypothesis. The Communicable Disease Branch (CD Branch) and Division of Public Health may assist the local health department with the epidemiological investigation of the outbreak and conduct further studies if necessary. The State Laboratory of Public Health (SLPH) may test clinical samples from ill individuals associated with the outbreak for detection of suspected microorganisms.

During the field investigation, it is critical to interview patrons who are ill, as well as those who were not. Information obtained from patrons during the investigation may include:

- ✓ ***Collecting*** information related to demographics, signs, and symptoms. Utilize hospital records and laboratory records when possible.
- ✓ ***Gathering*** data about all foods, water, and ice consumed within the past 72 hours that preceded the illness.
- ✓ ***Determining*** the illness history including when the illness started, and associated signs and symptoms.
- ✓ ***Obtaining*** any clinical specimens and food specimens where possible. Stool samples may be requested from ill patrons to identify the outbreak causing pathogen.
  - *If food samples are available, collect, label, and hold in refrigeration.*
  - *If a commercial product is suspected, gather the original container or package. This can be used to track a lot of numbers for tracing back to the processor.*

As the investigation continues, it is important to maintain communication with other team members including the laboratory, to ensure that they are aware of the proper protocol for mailing specimens of the collected food or biological samples.

XIV. Control Measures

Preventing the further spread of the illness should be the top priority of any investigation. Effective surveillance to track cases of foodborne illness and outbreaks is critical to developing useful control strategies, especially early in the investigation to reduce the possibility for new illnesses. Nonspecific control measures can be implemented when a facility has been implicated in an outbreak, but a specific food has not been identified. Pathogen-specific control measures should be taken once the pathogen has been identified.

A. Cleaning and Sanitizing

Before cleaning begins, ensure that personal protective equipment (PPE) is safely donned (slipped on) and doffed (removed). Anyone cleaning up vomit or diarrhea should wear single-use gloves and a face mask with effective covering. The use of improper chemicals on food contact surfaces can lead to chemical contamination of food products and may result in food contact surfaces that are not sanitized or disinfected properly. Examine the products used to clean and sanitize to ensure that they are approved for use on food contact surfaces. Verify the strength of sanitizing solutions and ensure that employees are knowledgeable on the proper strength and mixing ratio. Examine cleaning records and/or schedules if available.

B. Surface Clean-Up

Special attention should be given to food contact surfaces and high hand contact surfaces when someone vomits or experiences diarrhea in the establishment (Table 1). Unless environmental samples are needed for laboratory testing, surfaces should be cleaned and disinfected immediately to prevent the possibility of cross contamination.

Hard Surfaces	Carpet and Upholstered Furniture	Linen, Towels, and Clothing
Step 1. COVER • Cover the vomit or diarrhea with paper towels or an absorbent powder (cat litter) **Step 2. REMOVE** • Remove the soaked paper towels or hardened powder with a scoop/scraper and carefully place them in a plastic **Step 3. WASH** • Prepare a solution of soapy water. • Wash all surfaces contaminated with vomit or diarrhea with the soapy solution. • Rinse the soapy water from all surfaces **Step 4. DISINFECT** • Use paper towels or a mop with a washable or disposable mop head to wet all washed surfaces with disinfectant. • Rinse all food-contact surfaces with clean water after they have been disinfected. • Wash, rinse, and sanitize these surfaces prior to using for food preparation.	**Step 1. COVER** • Cover the vomit or diarrhea with paper towels **or** an absorbent powder (cat litter) to soak up liquids. **Step 2. REMOVE** • Carefully remove the saturated paper towels or hardened powder with the scoop/scrapper and place in a plastic bag. • **NEVER** vacuum. **Step 3. WASH** • Prepare a solution of soapy water. • Wash all surfaces contaminated with vomit or diarrhea with the soapy solution. • Rinse the soapy water from surfaces with clean water. **Step 4. DISINFECT** • Steam clean the area for 5 minutes at 170°F (76.7°C) (Not all steam cleaners can reach a temperature of 170°F (76.7°C), so check the manufacturer's specs). • Upholstered furniture that is soiled with vomit or diarrhe can be disinfected with a bleach solution, however the bleach will discolor the material.	**Step 1. CONTAIN** • Carefully place all washable contaminated items in a disposable bag to be laundered. **Step 2. WASH** • Machine wash soiled items in a washing machine using hot water, laundry detergent and disinfectant. • Wash with an effective disinfectant, bleach, or other chemical. **Step 3. DRY** • Dry freshly-washed items in a dryer on the high-heat setting.

Table 1. *Vomit & Diarrhea Surface Clean-up Plan*

C. After Clean Up

Remove

- Remove all PPE and place in the plastic bag.
- Do not touch surfaces that were just cleaned as they can be re-contaminated.
- After completing disinfection, close off the area for at least one hour when possible
- All PPE must be taken off before leaving the area that has just been cleaned.
- Place all used cleaning supplies in the plastic bag.
- Seal the bag with a twist tie or other effective method.
- Throw away all uncovered food in the contained area, as well as any food handled by the person who was sick.
- Remove all waste from the facility immediately following local, state, or federal rules.

Cleaning Mops & Scoops

- Wash and disinfect mop handles and other reusable cleaning supplies, such as scoops/scrapers, using the same steps used for hard surfaces (see **Table 1**).

Wash Hands

- Wash hands thoroughly before performing any other duties (food-handlers should double-wash hands).

D. Employee Health

The level of knowledge and practical application of policies that address ill employees will directly impact the potential for employee health-related outbreaks. Establishments that practice a proactive approach on open disclosure of illnesses and voluntary exclusion/restriction are better able to prevent employee health related outbreaks. Evaluate the Person in Charge's (PIC) knowledge of procedures and the events that occurred during the period leading to the outbreak using open-ended questions to obtain the information.

If the suspected pathogen is from a human source via the fecal-oral route (e.g. viral), such as norovirus, it is important to question the manager and employees about the health of the employees during the time prior to the outbreak. If an ill employee has prepared food products, the food must not be served. If samples are not needed for analysis, then the food should be discarded. Employees with active diarrhea, vomiting, or sore throat with fever have the potential to contaminate food and environmental surfaces with bacterial and viral particles. Pay close attention to the employees present during the investigation and note signs of possible illness, such as jaundice, flushed appearance, and multiple trips to the restroom. Observe hygiene practices of the employees, such as handwashing, general appearance, and the handling of ready-to-eat foods with bare hands. Proper handwashing and refraining from bare hand contact with ready-to-eat foods are important control measures during foodborne illness outbreaks. Food service employees with gastrointestinal symptoms (e.g. nausea, vomiting, diarrhea, stomach cramps) should be excluded from the food service establishment until symptomless for at least 48 hours, or until the employees have been cleared to return to work by a medical practitioner.

XV. Public Health Legal Preparedness

Food establishments should be prepared to address both regulatory requirements and the way these requirements might affect their internal policies on sharing information. Both public and private entities should be included in foodborne illness exercises to test their understanding of their legal authority and duties related to outbreaks. The adequacy of local and state legal preparedness for foodborne illness outbreaks should also be evaluated regularly through exercises and after-action reviews from actual outbreaks. As part of ensuring the jurisdictions' legal preparedness, local and state officials should at minimum follow the steps shown in **Figure 7** when consulting with their legal counsel. All states and territories have legal requirements for the reporting of certain illnesses and conditions, including illnesses likely to be foodborne (e.g., salmonellosis, campylobacteriosis, and STEC infection), by healthcare providers and laboratories to the local, state, or territorial public health agencies. **** If you do not understand or disagree with the advice provided by your agency's attorney, it is best to ask for clarification or discuss other options with him or her rather than requesting different advice from another attorney.***

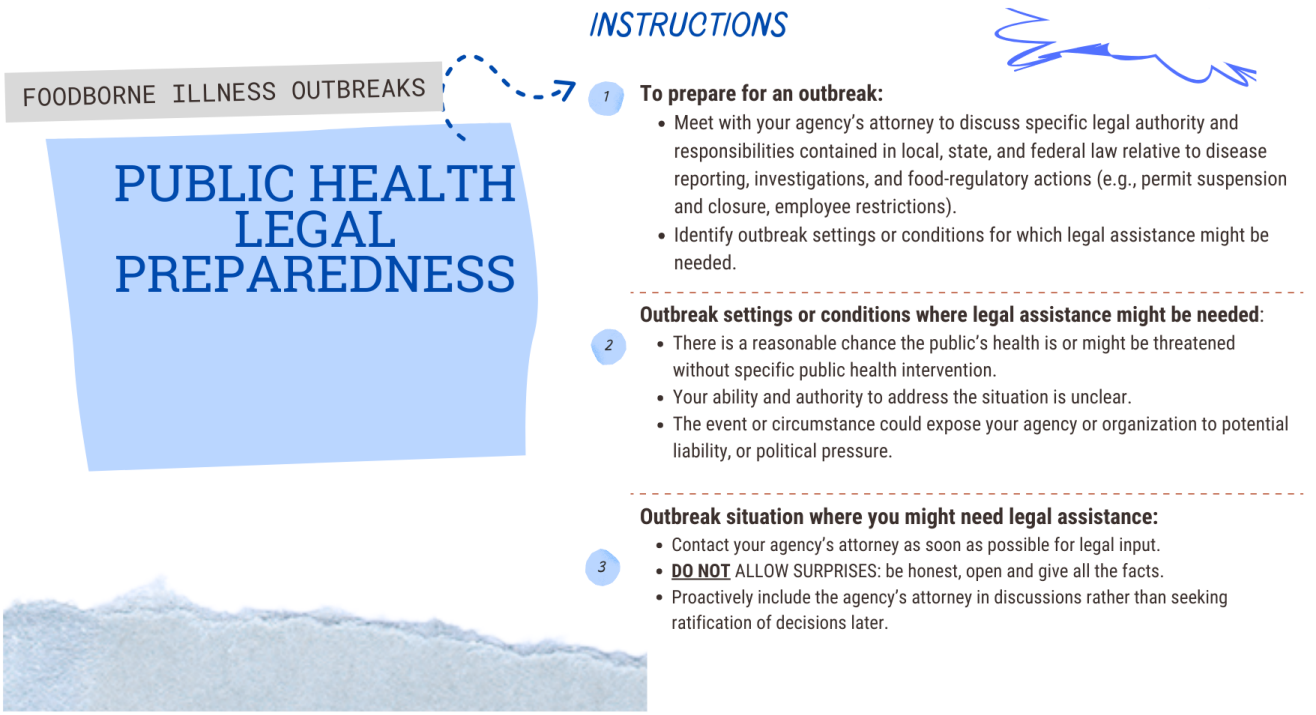

Figure 7. *Public Health Legal Actions*

XVI. After-Action Meeting

An after-action meeting is used to bring together the core players in the investigation (Environmental Health staff, the EPI Team, the State Communicable Disease Staff, and others) for a last review of the procedures, conclusions, control measures, and documentation. The Environmental Health staff can provide beneficial input into the practicality of procedures used during the investigation and offer opportunities for improvements. Discussion of the investigation provides a learning opportunity for less experienced staff and can identify future educational needs for food service establishments.

A review of the field investigation with the EPI team can lead to improvements in team procedures that better utilize time and resources for future investigations. Also consider disseminating the knowledge with the Local Health Department. Educating Health Department leadership on the efforts that go into the prevention and control of foodborne illnesses shows the value of foodborne illness investigations and may result in future support in funding and resources. Finally, meet with the manager and responsible employee(s) of the food service establishment to ensure that proper procedures are being followed. Address any concerns they may have with the implementation of the risk control plan or other procedures instructed earlier. Every outbreak will differ per occurrence; therefore, adjust the plan or procedures as necessary.

XVII. Summary

Foodborne illness outbreaks are complex and rapidly evolving situations that require quick response to reduce additional illnesses. There are multiple partners involved in outbreak investigations, including state, federal, and local regulatory authorities. Local EPI teams work to confirm the diagnosis and identify cases to develop a hypothesis. Environmental Health Specialists assist in interviewing food workers, conducting environmental assessments, and helping to implement control measures. All partners must work together to solve outbreaks and determine contributing factors to reducing chances of recurring outbreaks.

XVIII. Resources

(1) Outbreak Toolkit. World Health Organization. Retrieved April 2024, from https://www.who.int/emergencies/outbreak-toolkit

CIFOR Toolkit. Council to Improve Foodborne Outbreak Response. Retrieved April 2024, from https://cifor.us/products/toolkit

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