

Planning and Preparation

The primary goal of a foodborne disease outbreak investigation is to implement control measures as quickly as possible to halt transmission of illness. Another important goal is to understand the processes that led to food contamination or pathogen transmission well enough to prevent similar outbreaks. Good planning and preparation, bringing the right expertise to the investigation, communicating quickly with all organizations that should be involved, and rapidly sharing investigation findings can accomplish these goals.

The early days of an investigation are critical. Ideally an agency should always be prepared for an investigation so it will spend as little time as possible getting organized once an outbreak is identified. This chapter describes the roles of the major agencies involved in foodborne disease outbreak response and highlights the resources, processes, and relationships that should be in place before an outbreak. The chapter also provides links to related topics and more detailed information about outbreak investigation and response throughout these Guidelines.

3.0. Introduction

When a possible foodborne disease outbreak is first detected or reported, investigators will not know whether the disease is foodborne, waterborne, or attributable to other causes. Investigators must keep an open mind in the early stages of the investigation to ensure that possible causes are not prematurely ruled out. Although these Guidelines focus on foodborne

disease, the agency roles and responsibilities described in this chapter, and many of the surveillance and outbreak detection methods described in Chapter 4 and the outbreak investigation methods described in Chapter 5 apply to a variety of enteric and other illnesses, regardless of the source of contamination.

3.1. Agency Roles

3.1.1. Overview

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. The nature of the outbreak, including the type of pathogen, suspected or implicated vehicle, number and location of affected persons, geographic jurisdictions involved, and local and state food-safety rules and laws, will determine the types of agencies that need to be involved. Section 7.2 in these Guidelines provides detailed information about the major indicators that an outbreak requires a multijurisdictional response (i.e., response by multiple agencies and agencies at different levels of government).

Outbreak response will also be influenced by agencies' roles and responsibilities and typically available resources. Each agency's response plan should include its likely role in a foodborne disease outbreak investigation, staff (or positions) that may be involved, contact information for relevant external agencies, and communication and escalation procedures for working with those agencies.

3.1.2. Local, State, and Federal Agencies

Across the country, state and local agencies differ widely in their organizational structure, responsibilities, and relationships. The sections below summarize typical responsibilities for agencies at the local and state levels.

However, assignment of those responsibilities will vary depending on a particular state's organizational, legal, and regulatory structure; the distribution of responsibilities across different types of state and local agencies; and the size and capacity of the local agencies.

3.1.2.1. Local health agencies

Throughout the United States, local health agencies vary extensively—from those in small rural communities serving a population of 20,000 or less to those in large metropolitan areas serving populations of eight million or more. Consequently, the size, complexity of function, and availability of resources differ significantly among agencies. However, all local health agencies conduct the following roles and responsibilities to greater or lesser degrees.

- **Roles and responsibilities**

Conduct surveillance; receive complaints about possible foodborne illnesses; maintain and routinely review complaints of possible foodborne illnesses; routinely communicate with local health-care professionals; conduct interviews and gather information from ill persons in local or multijurisdictional outbreaks; regulate food-service operations; routinely inspect food-service operations; investigate complaints about food-service operations; implement control measures to stop outbreaks; educate food workers about preventing outbreaks of foodborne disease; inform the public and the media;

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serve as liaison with local food industry representatives and with the state and federal public health and food-safety regulatory agencies. May also provide advanced laboratory testing, including subtyping, such as molecular fingerprinting in the National Molecular Subtyping Network for Foodborne Disease Surveillance (PulseNet).

- **Resources**

Vary by agency but may include expertise in epidemiologic and environmental outbreak investigation and response and health education and promotion information for dissemination to the public. Extensive knowledge of local populations and community businesses, health-care providers and organizations, and other resources.

- **Contribution to outbreak investigation and response**

Detect foodborne diseases; identify local outbreaks; know about suspected facilities (e.g., facility inspection reports, previous complaints); support recall efforts; know affected communities; know local health-care professionals and diagnostic practices.

3.1.2.2. State agencies—health department

- **Roles and responsibilities**

Conduct surveillance; identify local and statewide outbreaks; coordinate multijurisdictional outbreaks; provide advanced laboratory testing, including molecular fingerprinting in PulseNet; support or direct environmental, laboratory, and epidemiologic investigations with advanced expertise; investigate outbreaks associated with commercially distributed products; provide health education and promotion materials; maintain tools for collecting and analyzing outbreak-associated information; provide public information; provide legal support for outbreak investigation and control; promote statewide policies to increase food safety; serve as

liaison, and coordinate communication with other state, local, and federal agencies and (in some instances) with food corporations; disseminate information to local agencies. May conduct investigations in local areas where there is no local health agency with jurisdiction.

- **Resources**

Expertise in epidemiologic and environmental outbreak investigation and response (including traceback investigations); expertise in specific disease agents; advanced laboratory testing with expertise in microbial analyses and identification through state laboratories; tools for collecting and analyzing outbreak-associated information; health education and promotion information (often in multiple languages) for dissemination to the public; additional staff to aid in outbreak investigations.

- **Contribution to outbreak investigation and response**

Epidemiologic, environmental, and laboratory support for local health agencies; coordination of multijurisdictional outbreaks.

3.1.2.3. State agencies—environmental health

Note: these roles may be carried out by agencies with different names, including environmental conservation or quality.

- **Roles and responsibilities**

Support or direct environmental testing; provide advanced laboratory testing of food or environmental samples; provide educational materials to public about food and environmental safety; maintain tools for collecting and analyzing outbreak-associated information; promote statewide policies to increase food and environmental safety; serve as liaison with other state, local, and federal agencies; disseminate information to local agencies.

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- **Resources**

Expertise in foodborne and environmental outbreak investigation and response, as well as regulatory food inspections; advanced laboratory testing of food and environmental samples with expertise in microbial analyses and identification.

- **Contribution to outbreak investigation and response**

Environmental investigation and laboratory support for local health agencies, sometimes takes the lead in foodborne disease outbreak investigation.

3.1.2.4. State agencies—food-safety regulatory authorities

Note: these roles may be carried out by agencies with different names, including Department of Agriculture, Food Protection, Health or Environmental Health.

- **Roles and responsibilities**

Ensure good manufacturing practices in commercial food operations; test dairy, meat, and food products for microbial contamination; inspect plant(s) after they are implicated in an outbreak; coordinate food recalls conducted by industry; and stop sales of adulterated product within their jurisdictions. Conduct regulatory sanitation inspections at commercial food operations, retail establishments, such as grocery stores, supermarkets, and warehouses. Consult with health departments in outbreak investigations (e.g., support through knowledge of food production and distribution and information provided by industry that may contribute to the success of investigations). Conduct investigational tracebacks as part of exposure assessments in epidemiologic studies. Conduct environmental health assessments at locations where food may have been contaminated.

- **Resources**

Expertise in food manufacturing and distribution; staff to conduct plant

inspections and specialized testing of dairy, meat, and food products; expertise in regulatory tracebacks. Laboratory support, usually involving surveillance for food adulterants, including chemical, physical, and microbiological adulterants and contaminants.

- **Contribution to outbreak investigation and response**

Support investigations that involve commercially distributed food products through consultation with health department investigators, plant inspections, traceback investigations, and food recalls.

3.1.2.5. Federal agencies—Centers for Disease Control and Prevention

- **Roles and responsibilities**

Conducts or coordinates national surveillance for illnesses caused by pathogens commonly transmitted through food and for outbreaks of foodborne diseases of any cause; leads and supports national surveillance and communication networks, including Laboratory-based Enteric Diseases Surveillance system (LEDS), Foodborne Diseases Active Surveillance Network (FoodNet), PulseNet, Environmental Health Specialists Network (EHS-Net), and Foodborne Disease Outbreak Surveillance System (FDOSS); maintains clinical, epidemiologic, and laboratory expertise in pathogens of public health importance; develops and implements better tools for public health surveillance; provides consultation, assistance, and leadership in outbreak investigations; improves and standardizes laboratory testing methods for foodborne disease pathogens; provides advanced laboratory testing; facilitates coordination among jurisdictions within multijurisdictional outbreaks, where appropriate; coordinates communication with other federal agencies; provides training in investigation and laboratory methods;

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under the Food Safety Modernization Act (FSMA), coordinates Integrated Food Safety Centers of Excellence, partnerships between state health departments and academic centers to provide technical assistance and training on epidemiologic, laboratory, and environmental investigations of foodborne illness outbreaks and associated analyses (www.cdc.gov/foodsafety/fsma.html#section399); coordinates and collaborates with international surveillance, communication, and training methods; works to prevent and control outbreaks on cruise ships.

- **Resources**

Experts (or trainees) in clinical, epidemiologic, and environmental health aspects to assist with cluster evaluation and outbreak investigations; advanced laboratory capacity (including resources to develop new testing methods); surge capacity to assist in large outbreaks; tools for collecting and analyzing outbreak-associated information; training programs; health education and promotion materials for the public; resources through the Foodborne Disease Centers for Outbreak Response Enhancement (FoodCore) program, centers based in health departments around the country that work together to develop model practices for outbreak response so that others can learn from their experiences and replicate what works best (www.cdc.gov/foodcore/index.html).

- **Contribution to outbreak investigation and response**

Assistance in single-jurisdiction outbreaks upon request of the jurisdiction; leadership, coordination, and logistics support and coordination for multijurisdictional outbreaks; centralized data collection and analysis for large multistate outbreaks; assistance in outbreaks from new or rare disease agents or from new modes of transmission of known disease agents;

advanced laboratory testing; availability of additional personnel and other resources to aid local and state health agencies; conduit to other federal agencies.

3.1.2.6. Federal agencies—Food and Drug Administration

- **Roles and responsibilities**

Named as lead agency for food safety under the Food Safety Modernization Act (FSMA) with a focus on preventing outbreaks through requirements placed on food-production facilities to implement contamination prevention plans, ability to regularly monitor those facilities, and ability to issue product recalls if necessary. Oversight of imported food, with ability to conduct inspections and refuse admission of imported food products. Regulates the safety of most foods (except meat, poultry, and pasteurized egg products, which are regulated by USDA's Food Safety and Inspection Service [USDA-FSIS]). Regulates dietary supplements, food additives, and food labeling for FDA-regulated foods, and oversees seafood and juice regulations for Hazard Analysis and Critical Control Points. Conducts research into foodborne contaminants. Conducts post-market surveillance and compliance of food industry. Oversees regulatory traceback investigations and recalls of food products. Publishes the FDA Food Code. Regulates ships that travel interstate, such as on rivers and intercoastal waters, as well as trains and buses that travel interstate. Improves and standardizes laboratory testing methods for foodborne disease pathogens; provides advanced laboratory testing; assists non-federal, governmental food laboratories in becoming accredited to the ISO/IEC 17025:2005 standard. Facilitates coordination among jurisdictions within multijurisdictional outbreaks, where appropriate; coordinates communication with states and other federal agencies;

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provides training in investigation and testing methods; coordinates and collaborates with international food regulatory agencies, communication, and training methods.

- **Resources**

The Coordinated Outbreak Response and Evaluation network (CORE) is a dedicated multidisciplinary team of expert epidemiologists, microbiologists, environmental health specialists, consumer safety officers, and communications specialists who coordinate FDA's response to foodborne disease outbreak events. CORE coordinates the efforts of 20 District Offices located in five regions (www.fda.gov/AboutFDA/CentersOffices/OfficeofGlobalRegulatoryOperationsandPolicy/ORAUcm135269.htm) that provide field investigators, laboratory support, technical consultation, regulatory support, media relations and liaison with states and Rapid Response Teams (RRTs; See section 3.1.2.8). CORE is supported by subject-matter experts from FDA's Center for Food Safety and Applied Nutrition and the Office of Regulatory Affairs, who provide policy, technical, and scientific support to foodborne disease outbreak investigations and education materials for the public.

- **Contribution to outbreak investigation and response**

Assistance in identification of the food product(s) associated with an outbreak, the source, and the extent of distribution; testing of product(s) obtained from commerce or production; traceback and environmental health assessments, including investigational tracebacks as part of exposure assessments in epidemiologic studies; prevention of further exposure to contaminated product(s); initiation of regulatory action, including mandating recalls, if appropriate; and assistance to the Federal Bureau of Investigation (FBI) when deliberate contamination of food is suspected.

3.1.2.7. Federal agencies—U.S. Department of Agriculture, Food Safety and Inspection Service

- **Roles and responsibilities**

Ensures the nation's commercial supply of meat, poultry, and pasteurized egg products is safe, wholesome, and correctly labeled and packaged through a national program of inspection, investigation, and enforcement; provides data analysis, advice, and recommendations on food safety; conducts microbiological testing of meat and poultry products; responds to foodborne illnesses, intentional food contamination, and major threats to FSIS-regulated products, including overseeing recalls for contaminated meat and poultry products; conducts audits to determine the equivalency of foreign food-safety systems and re-inspecting imported meat, poultry, and egg products; develops public information and education programs for consumers.

- **Resources**

Approximately 7600 inspection program personnel who provide daily regulatory oversight at more than 6000 FSIS-regulated establishments nationwide coordinated by 10 district offices; three field laboratories, including the Outbreaks Section of Eastern Laboratory in Athens, Georgia; field investigators with expertise in inspection, traceback, and enforcement; personnel with expertise in food safety and public health science and in performing environmental health assessments; educational materials and guidance for consumers.

- **Contribution to outbreak investigation and response**

Assistance, traceback coordination, and epidemiologic consultation during investigations involving FSIS-regulated meat, poultry, and egg products; conducting investigational traceback investigations as part of exposure assessments in epidemiologic studies; testing of product

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from commerce or production; ability to take enforcement and regulatory control actions against food manufacturers and distributors; assistance in working with international food manufacturers and distributors; consultation to public health and state agriculture agencies.

3.1.2.8. Cross-agency program—Rapid Response Teams

The FDA Rapid Response Team (RRT) Project is an FDA initiative that partners with state programs to build food-safety infrastructure and integrated rapid response for all-hazards food emergencies. FDA works with 19 pilot RRTs through cooperative agreements to improve food program infrastructure; strengthen collaboration among local, state, and federal partners; and create fully integrated and sustained response capabilities for food emergencies. The knowledge gained from this initiative is being captured in the RRT Best Practices Manual (www.afdo.org/Resources/Documents/6-resources/The_RRT_Manual_2013_FINAL.pdf). In states where they exist, the RRT assumes the role of the Outbreak Investigation and Control Team, as described in section 3.2 below, for multijurisdictional and/or state-level outbreaks.

3.1.2.9. Cross-agency program—Food Emergency Response Network (FERN)

USDA-FSIS and FDA co-lead the Food Emergency Response Network (FERN), an integrated network of local, state, and federal laboratories across the United States that are capable of rapid response to food-related emergencies and attacks on the U.S. food supply. FERN has four primary responsibilities: prevention, preparedness, response, and recovery. Although FERN was begun with terrorism in mind, the network has played a crucial role during large-scale foodborne disease outbreaks, including the 2011 multistate outbreak of listeriosis linked to cantaloupes. FERN laboratories have the capability to detect and identify biological,

chemical, and radiologic agents in food and provide food-testing surge capacity during national emergencies. More information about FERN is available at www.fernlab.org.

3.1.2.10. Cross-agency program—Federal Multi-Agency Coordination Group for Foodborne Illness Outbreaks (MAC-FIO)

The Federal Multi-Agency Coordination Group for Foodborne Illness Outbreaks (MAC-FIO) was established to ensure a rapid and coordinated response by federal agencies to large-scale and/or complex foodborne illness outbreaks, including outbreaks caused by intentional food contamination. When activated MAC-FIO will meet regularly to provide policy direction and prioritize resources applied to the response, as appropriate. MAC-FIO also coordinates and collaborates with local, state, and tribal government officials. MAC-FIO, co-chaired by the Director of the USDA Office of Homeland Security and Emergency Coordination and the Health and Human Services Assistant Secretary for Preparedness and Response, includes officials from supporting agencies with decision-making authority.

3.1.3. Other Agencies

Outbreaks can occur in facilities or communities managed by agencies that have some level of autonomy and operate their own public health programs. Such agencies include tribes, the military, and the U.S. Department of the Interior (National Park Service [NPS]). The FBI or other law enforcement agency may assume leadership of the outbreak investigation when intentional contamination of a food is suspected or confirmed, with the initial lead agency shifting to a supporting role. Local, state, and federal public health agencies need to understand the jurisdictional issues in outbreaks involving these settings and available resources, and establish relationships with these agencies before any outbreaks.

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3.1.3.1. Tribes

- Jurisdiction**
 Varies by tribal organization, but in general the tribes have complete sovereignty and are completely autonomous. Investigations may be conducted by tribal health staff, Indian Health Service (IHS) staff, or state or local health departments, but nontribal entities can become involved in an investigation only at the tribe's request. No legal requirement exists for reporting a foodborne disease outbreak to any public health officials, although memoranda of understanding between tribal governments and local or state agencies may establish lines of communication and reciprocal support during public health emergencies. Control measures typically are implemented by IHS staff in cooperation with tribal government but can be implemented only when authorized by tribal government.
- Relationships**
 Outbreaks may be detected by IHS staff or by tribal members and reported to IHS. IHS notifies the appropriate state and local health departments. Some tribes also may notify the local or state health department or CDC. State and local health department staff need to develop relationships with IHS public health staff, tribal health staff (if any), and tribal leadership in tribal areas within or adjacent to the public health agency's jurisdiction. During an outbreak, communication should be ongoing, not only between state or local health department and IHS, but also directly with tribal government. Regional tribal epidemiology centers, run by tribal boards, provide epidemiology capacity for multiple tribes and focus on health issues selected by the boards. They may become involved in outbreak investigations and are a good place to promote routine communication. IHS is a good source of information about coordinating public health issues with tribes.

- Resources for outbreak investigation and response**

IHS has many public health staff, including sanitarians and public health nurses, at clinics on many tribal lands. These staff most likely would handle an outbreak and would request help from IHS, the state, or CDC, if needed. Some tribes have public health staff, but most do not have public health laws or the capacity to respond to outbreaks.

3.1.3.2. Military

- Jurisdiction**
 Autonomous authority over all military bases, facilities (including food-production and food-service facilities and health-care facilities), and vehicles. Jurisdiction depends on the particular branch of the military involved and whether the U.S. Department of Defense maintains public health responsibility.
- Relationships**
 Military public health personnel communicate with local and state health agencies for outbreaks that might involve civilians. Local and state health agencies should establish communication with the public health staff of any military facilities within or adjacent to their jurisdiction before any outbreaks. Other branches of the military and other federal agencies communicate through the Multi-Agency Coordination Group for Foodborne Illness Outbreaks (established by the U.S. Department of Health and Human Services and USDA) which is activated in response to large-scale and/or complex foodborne illness outbreaks (see 3.1.2.10).
- Resources for outbreak investigation and response**
 Military agencies conduct training in food safety and epidemiology; inspect and test food-production and food-processing facilities and delivered food products; and coordinate these programs with other military and

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federal agencies. Preventive medicine and environmental health officers in each branch direct and conduct epidemiologic investigations of foodborne disease outbreaks and make recommendations. Veterinary officers conduct traceback investigations. The Department of Defense has officers trained in public health, environmental health, epidemiology, microbiology, toxicology, pathology, and food technology who can coordinate and support outbreak investigations.

3.1.3.3. *National Park Service*

- **Jurisdiction**

Jurisdiction in National Parks is a function of the legislation designating the specific park. Three types of jurisdiction exist: a) exclusive federal jurisdiction; b) concurrent jurisdiction with state and local agencies; and c) proprietary (owned by the federal government but sometimes operated by a local entity and dependent on support from local police, fire departments, and others for services).

- **Relationships**

Notifies relevant local and state health departments of suspected outbreaks. Notifies appropriate federal agency if commercial product is suspected. Works closely with CDC. Relies on CDC or state health departments for laboratory testing. Local and state health agencies whose jurisdiction contains or is adjacent to a national park should establish communication with the NPS Office of Public Health before any outbreaks. Where appropriate, local and state health departments should include questions about visiting parks when they conduct interviews during an investigation and notify NPS if a park might be involved.

- **Resources for outbreak investigation and response**

Epidemiologic expertise, including a medical

epidemiologist in the NPS Office of Public Health; U.S. Public Health Service staff assigned to NPS to conduct investigations (including regional public health consultants based around the country); park rangers who have extensive knowledge of their jurisdiction and the population that visits that jurisdiction; scientists in the NPS system with a wide range of expertise (e.g., veterinarians, water specialists, environmental health); contractors who run park operations on behalf of NPS including health clinics in selected sites.

3.1.3.4. *Other federal lands*

- **Jurisdiction**

NPS jurisdiction is described above. Public health jurisdiction on other types of federal land is not always easy to determine. On many federal lands (e.g., national forests, Bureau of Land Management land), state laws apply, but federal agencies may have overlapping jurisdiction. State laws generally do not apply to federal prisons. Each public health agency that contains federal lands within its jurisdiction should identify the responsible local, state, and federal agencies before an outbreak.

3.1.3.5. *Law enforcement*

If intentional contamination of food or other criminal activity is suspected, law enforcement agencies at the local, state, and federal levels will become involved in the investigation and may assume leadership of the outbreak investigation, with the initial lead agency shifting to a supporting role. Agencies responsible for controlling foodborne disease outbreaks should establish relationships and communication pathways with law enforcement agencies before any outbreak. Any suspicion of intentional contamination should be reported immediately to law enforcement agencies.

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3.1.4. Industry—Food Manufacturers, Distributors, Retailers, and Trade Associations

- **Roles and responsibilities**

Growing, raising, processing, manufacturing, packaging, distributing, storing, and selling food by using practices that protect the public's health; withdrawing or recalling products from the marketplace when they have been identified as the source of a foodborne disease outbreak; communicating with the public about outbreaks associated with food products.

- **Resources**

Knowledge of and information about product brands, formulations, possible food-safety hazards, processing practices, and distribution patterns to assist with outbreak hypothesis generation and testing and product/ingredient tracing. Some industry members have expertise in microbiology and food-safety research.

- **Contribution to outbreak investigation and response**

Source of information about the products and practices under investigation, including product characteristics, formulations, distribution patterns, market share, and customers that have purchased the products; working collaboratively to establish a framework for rapid communication and information sharing with the public; outbreak hypothesis generation and testing; mechanisms for withdrawing/recalling products from the marketplace.

3.1.5. Academic Centers

In some communities, academic centers are available to partner with agencies during investigations by conducting special laboratory analyses or providing additional resources, conducting interviews, or implementing control measures. In particular, CDC has designated five Integrated Food Safety Centers of Excellence across the country where academic centers have partnered with state health departments to provide technical assistance and training on epidemiologic, laboratory, and environmental investigations of foodborne illness outbreaks and associated analyses (www.cdc.gov/foodsafety/fsma.html#section399). Academic centers also can conduct applied food-safety research to expand results of investigations, including work that might identify additional causal factors for outbreaks, and test alternative control measures. USDA's National Institute of Food and Agriculture (USDA-NIFA) Food Virology Collaborative for Outreach, Research, and Education (NoroCORE) includes academic institutions that are working to strengthen food safety by studying human noroviruses across the food supply chain in an effort to design effective control measures and prevent viral foodborne illness. The published results from research can help inform future outbreak investigations and those implementing control measures. Relationships with academic centers and expectations for their role in outbreak response should be established before any outbreak.

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CIFOR Keys to Success:

Focus Area 1—Relationship with relevant agencies and organizations

Roles and Responsibilities

- Agency/jurisdiction has procedures for working with other agencies and organizations during an outbreak response. Procedures are written and easily accessible by staff.
- Agency/jurisdiction determines in advance the role of the local incident command system (ICS) in the response to an outbreak.
- Staff understand the likely roles/responsibilities of key agencies and organizations during an outbreak response, the resources they have available, and the contributions they can make to an outbreak response.
- Agency/jurisdiction cross-trains with other key agencies and organizations to better understand its roles and responsibilities during an outbreak response.

Communication

- Staff know how to contact key local, state, and federal agencies likely to be involved in foodborne disease outbreak response.
- Agency/jurisdiction has procedures for communication between members of the outbreak investigation and control team and their agencies and with other agencies and organizations involved in foodborne disease outbreak response.
- Staff undertake routine communication with key agencies and organizations before an outbreak occurs.

Multijurisdictional Outbreaks

- Staff readily recognize signs suggestive of a multijurisdictional foodborne disease outbreak.
- Staff rapidly notify agencies that might need to participate in a multijurisdictional outbreak response or will be affected by the event.

Making Changes

- Agency/jurisdiction debriefs investigators after each outbreak response, and refines outbreak response planning based on lessons learned.
- Agency/jurisdiction has performance indicators related to relationships with other agencies and routinely evaluates its performance in this Focus Area.

3.2. Outbreak Investigation and Control Team

3.2.1. Overview

The responsibility for investigating foodborne disease outbreaks and implementing control measures falls on a team of people who each contribute different knowledge and skills. Depending on the size and scope of the investigation, the size of the team varies from one or two to hundreds. In smaller investigations, individuals may fulfill multiple

roles concurrently. A team is more likely to effectively and efficiently respond to an outbreak if team members combine their strengths and collaborate.

Team members' assigned tasks and their knowledge and skills define their roles. Job titles alone might not accurately indicate who does what. Members may come from different programs within an agency or

3.2. Outbreak Investigation and Control Team

from different agencies. Membership in the outbreak investigation and control team can vary depending on the specifics of the outbreak—for example, different disease pathogens or different outbreak settings require different skills or agency associations. In many investigations, roles are defined relatively informally and may change as the investigation unfolds. In other investigations, roles are mapped to the formal structure of the National Incident Management System (NIMS) which federal agencies are now mandated to utilize (see Section 3.10 for more specifics about NIMS and Incident Command Systems).

The composition of foodborne disease outbreak investigation and control teams should be determined before any outbreaks. Team members should be pre-assigned specific tasks and should receive training if necessary to ensure they know how to carry out those tasks. They also should understand the roles of the other team members.

Most importantly, team members should work closely together. Their roles are not mutually exclusive; for example, epidemiologists can help laboratorians; environmental health specialists can help epidemiologists. Furthermore, the work of one team member often builds on the work of others. The team cannot succeed without a strong working relationship and ongoing, effective communication among its members. Key principles of outbreak investigation, including leadership and communication among team members, are covered in Section 5.1.2. The process for activating the outbreak investigation and control team is described in Section 5.2.2.

3.2.2. Roles of Core Team Members

The same person(s) may play many of these roles, depending on the size of the investigation.

3.2.2.1. Team leader

- Responsibilities**
 Sets and enforces priorities; coordinates all activities associated with the investigation; serves as the point of contact about the investigation; coordinates content of messages to the public through the public information officer; communicates with other organizations involved in the investigation; communicates recommended course of action determined by team to agency decision-makers.
- Desirable skills**
 Organization of investigation information; general knowledge of all elements of an outbreak investigation and the roles of each team member; specific expertise with outbreak investigation methods and with foodborne infections; understanding of roles of all agencies involved in investigation; ability to communicate; leadership skills.

3.2.2.2. Epidemiologic investigator

- Responsibilities**
 Identifies and interviews cases; develops hypotheses and strategies to test them; interviews both cases and healthy controls; plans epidemiologic studies; collects and analyzes investigation data using statistical analyses or collaborating with a statistician; reports results; collects clinical specimens; coordinates testing of clinical specimens and environmental samples; consults and coordinates with environmental and laboratory investigators.
- Desirable skills**
 Ability to rapidly assess a situation; interpret surveillance information; design epidemiologic studies (e.g., case-control studies, cohort studies, and surveys) and develop questionnaires; conduct epidemiologic studies; conduct interviews, including hypothesis-generating interviews;

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with assistance from the laboratory investigator, identify appropriate clinical tests for suspected pathogens; and analyze and interpret data using standard epidemiologic methods as defined in the Applied Epidemiology Competencies, including measures of association and tests of statistical significance (www.cste.org/group/CSTECDAEC).

3.2.2.3. *Environmental investigator*

- **Responsibilities**

Investigates food preparation sites, including sites involved with growing, raising, processing, manufacturing, packaging, storing, and preparing food; collects environmental and food samples, and documents and maintains adequate chain of custody of the samples through their delivery to the testing laboratory; arranges for testing of samples; coordinates food sampling, management, and testing procedures with laboratory investigator; reports results; interviews food workers and managers; reviews food-preparation and food-handling records; reviews food-inventory and food-distribution records, food flow, contributing factors, and environmental antecedents; consults with epidemiologic and laboratory investigators; conducts environmental health assessments to determine contributing factors and environmental antecedents/ root causes; may conduct investigational traceback investigations as part of exposure assessments in epidemiologic studies; assesses industry food-safety systems following Hazard Analysis and Critical Control Point principles, where required; may also interview cases and collect stool samples; and identifies measures to prevent future outbreaks of foodborne illness.

- **Desirable skills**

Ability to think critically while investigating food-production and food-preparation

processes; conduct interviews; collect food and environmental samples, and document and maintain adequate chain of custody; with assistance from the laboratory investigator, identify appropriate tests for suspected pathogens. Knowledge about causative agent (e.g., likely sources, optimum growth conditions, inhibitory substances, means of inactivation), factors necessary to cause illness (e.g., infectious dose, portal of entry), and implicated vehicle (e.g., physical and chemical characteristics of the vehicle that might facilitate or inhibit growth, methods of production, processing, and preparation).

3.2.2.4. *Laboratory investigator*

- **Responsibilities**

Analyzes clinical specimens, food and environmental samples (depending on the state, the food and environmental samples may be tested in different laboratories than the clinical specimens); interprets test results and suggests follow-up testing; reports results; coordinates testing among laboratories; advises other team members about laboratory testing, including collection, handling, storage, and transport of specimens; communicates laboratory testing methods and results and the maintenance of chain of custody to USDA-FSIS and FDA investigators or other food-regulatory agency gathering evidence of food-product adulteration. USDA-FSIS and FDA recommend food-testing laboratories work to obtain accreditation under ISO standard 17025.

- **Desirable skills**

Varies with the suspected outbreak agent(s) but may include knowledge of classical or molecular microbiology and organic or inorganic chemistry or radiochemistry. Whether testing food and environmental samples, clinical specimens, or both, the laboratory investigator should be familiar

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with optimal specimen or sample types and with transport and storage conditions, including documenting and maintaining adequate chain of custody, testing methods, and relevant laboratory-based networks (e.g., PulseNet).

3.2.2.5. *Public information officer*

- **Responsibilities**

Develops general and specific messages for the public through the media; responds to media inquiries or identifies the appropriate spokesperson; coordinates communication with multiple agencies; disseminates information about outbreak status and overall policies, goals, and objectives to widespread and diverse audiences that include the executive and legislative branches of the government; local governments; the general public; and the local, state, and national news media.

- **Desirable skills**

Ability to prepare health education messages and press releases using best practices in health education and risk communications; and speaking and presentation skills. Understands mechanisms and protocol for relating to the news media, including press, radio, and television. Ability to communicate with a diverse audience that has limited scientific knowledge.

3.2.2.6 *Additional team members*

Additional team members with other expertise may be needed, depending on the unique characteristics of the disease or outbreak. Such persons might include public health nurses to assist in conducting interviews or collecting clinical samples; statisticians to assist in designing investigation studies and in analyzing data for large or complex outbreaks; health-care providers to discuss laboratory results with patients and to administer treatment and prophylactic medications; and health educators to help craft communications for the public.

3.2.3. Outbreak Investigation and Control Teams—Model Practices

These model practices are all recommended; however, full implementation of all of these practices might not be possible in many jurisdictions because of resource limitations and competing priorities. Implementing as many as possible and as completely as possible will improve the effectiveness of outbreak investigation and control teams.

3.2.3.1. *Emergency response unit*

All agencies that are responsible for responding to outbreaks should establish a dedicated emergency response unit. In small agencies with limited outbreaks, this might be a single person who receives advanced training. In large agencies, this might be a team of senior epidemiologists, environmental scientists, and laboratorians who can train and work together. The dedicated unit should respond to all outbreaks, giving consistency to investigations and enabling development of advanced expertise. In states with an RRT, the RRT will assume this role for the state agencies.

3.2.3.2. *Additional support for large-scale outbreaks*

An agency's ability to conduct interviews during outbreaks will directly affect the speed of response to the outbreak. Some outbreaks are too large for one agency to conduct the necessary interviews quickly enough with available resources. Advance preparations can help mitigate the impact of a large-scale outbreak and ensure effective response.

- Identify persons within the agency or from other organizations—such as other branches of government, university students, volunteers (e.g., Medical Reserve Corps)—who would have minimal skills or knowledge and would be willing to help conduct interviews or provide other support during a large-scale outbreak.
- Develop a contact list and protocol for contacting these individuals when needed. Ensure the list includes after-hours and

3.2. Outbreak Investigation and Control Team

weekend contact information, and assign an individual or group to update it regularly.

- Develop training and job description(s) for these individuals. If possible, provide on-the-job training specific to their assigned tasks and their roles in the overall investigation. Such training could occur shortly before performance of the necessary task.
- Outbreak investigations themselves provide the best opportunity to develop outbreak investigation skills. Mentored participation in an outbreak should be a priority for training.

3.2.3.3. Agency-specific response protocol and other resources

At a minimum, the outbreak investigation and control team should have been trained in specific pre-identified protocols. The team also needs access to additional resources that can help answer questions and provide information for decision-making during an outbreak. These protocols and resources should be assembled before an outbreak.

- Prepare a response protocol based on the CIFOR guidelines but also customized to the agency's needs with specific information relevant to the agency.
- Prepare a list of people in the agency who should be contacted in the event of an outbreak, including backups, and contact people in external agencies (state, adjacent local health, and federal agencies). Ensure the list includes after-hours and weekend contact information, and update it regularly.
- Assemble a reference library (including online resources) with information about foodborne diseases, enteric illnesses, and control measures. Where possible include electronic resources that can be accessed by laptop computers during field investigations. Regularly review and update the contents of this reference library.
- Assemble a list of resource persons who have expertise in specific disease agents

and investigation methods and contact information for these persons.

- Develop field investigation or “go” kits for environmental health investigators, including sampling utensils, thermometers, stool collection kits, and appropriate forms. Ensure that relevant field investigators have access to these kits and are aware of where they are located. Detailed information about kits and sample lists are included at the CIFOR Clearinghouse at www.cifor.us/clearinghouse/keywordsearch.cfm and in the International Association for Food Protection *Procedures to Investigate Foodborne Illness* (<http://www.foodprotection.org/publications/other-publications/>).

3.2.3.4. Training for the team

Ongoing training is critical for all members of the outbreak investigation and control team to ensure they are proficient at performing the duties assigned to them. The training should include continuing education to maintain and improve skills within their specialty and specific training in the agency's outbreak response protocols and the member's team role. Training also should be provided for additional tasks outside of a team member's regular role that they might be required to perform. For example, in a large outbreak, public health nurses, environmental health specialists, or other staff might be required to interview ill persons for epidemiologic studies and consequently should receive training specifically in how to conduct interviews. For a larger agency that investigates a large number of outbreaks, this may be on-the-job training. For a smaller agency with a limited number of outbreak investigations, special training opportunities should be arranged. Consider the use of webinar technology where there is little or no opportunity for travel.

- Ensure all team members have a common understanding of the primary goal for outbreak response, which is to implement

3.2. Outbreak Investigation and Control Team

control measures as quickly as possible to prevent illness.

- Provide team members with continuing education and training opportunities, including cross-training/joint training.
- Exercise teams together to ensure each team member understands and can perform his or her role according to agency-specific protocols and legal authorities and understands the roles and responsibilities of other team members. These exercises also can identify likely problem areas and gaps in resources.
- Conduct regional training with multiple agencies, including table-top exercises. Such training can help identify problems that might arise during a multijurisdictional outbreak.
- Make training interesting, covering not just methods and statistics but also outcomes of the people in the outbreak and the investigation.
- Identify opportunities to collaborate with representatives of the food industry in training exercises, to foster understanding and develop communication strategies that can help streamline actual outbreak investigations.
- Outbreaks themselves provide training opportunities. If an agency does not frequently have outbreaks, team members might be able to assist in responses to outbreaks in other jurisdictions. This can help promote learning and provide valuable insights an agency can use to refine its own protocols.
- Conduct a debriefing after each outbreak to identify lessons learned and refine the agency's response protocols.
- Foodborne disease outbreaks provide a good training ground for any epidemiologic investigation. Involving other agency staff in investigations, even if their regular job is not related to food safety, can both support the current investigation and render these staff better prepared to assist in future investigations.

CIFOR Keys to Success: Focus Area 2—Necessary Resources

Outbreak Investigation and Control Team

- Agency/jurisdiction has access to staff with knowledge and experience in epidemiology, environmental health, the laboratory, health education, and communications to help in the response to an outbreak.
- Agency/jurisdiction has a designated outbreak investigation and control team with expertise in epidemiology, environmental health, and the laboratory.
- Staff have access to and familiarity with standardized documents used in an outbreak response, including reporting forms, questionnaires, and disease-specific information sheets.

Surge Capacity

- Available resources enable agency/jurisdiction to continue other necessary (core) functions during an outbreak response.
- Agency/jurisdiction anticipates gaps in resources and identifies sources to fill those gaps before an outbreak occurs (e.g., obtaining epidemiologic support from the state public health agency, identifying outside laboratories to provide support in large outbreaks).

Making Changes

- Agency/jurisdiction conducts a debriefing among investigators after each outbreak response and refines outbreak response planning based on lessons learned.
- Agency/jurisdiction has performance indicators related to the resources necessary for outbreak response, and routinely evaluates its performance in this focus area.

3.3. Resources

3.3.1. Overview

Part of preparing to investigate a foodborne disease outbreak is assembling the necessary resources—supplies, equipment, and people—to support the outbreak investigation and control team and ensure that everything needed in the investigation and response is quickly available. Having a complete set of supplies and equipment at hand enables the outbreak investigation and control team to move rapidly into the field. Having support personnel available ensures that phone calls can be answered and data can be entered quickly into databases for analysis, reducing wasted time. Procedures for routinely reviewing and replacing missing or outdated supplies and equipment should be part of an agency's outbreak response protocol.

3.3.2. Recommended Resources

3.3.2.1. Administrative staff

Support personnel to make phone calls, answer incoming calls from concerned members of the public, enter data into a database, copy paperwork, and other administrative work.

3.3.2.2. Legal counsel

Legal counsel to prepare public health orders, review and recommend revisions in agency procedures and control measures, ensure confidentiality of health data, and address legal issues.

3.3.2.3. Equipment

- Sterilization equipment for sample collection tools and temperature probes.
- Temperature-checking probes and backups.
- Equipment to determine food characteristics (e.g., pH, water activity, sugar content).
- Capabilities and equipment for conference calls.
- Multiple phone lines.
- Computers, laptops, software (e.g., data

entry, statistical), portable printers, paper, graph paper, pens, clipboards.

- Camera.

3.3.2.4. Supplies

Keep food-sample containers and investigation equipment and clinical specimen kits, including stool specimens and blood drawing kits, available at all times (Box 3.1). Foodborne disease outbreak investigation kits should be maintained in ready-to-use condition, with sampling containers and implements kept sterile. Establish, maintain, and review or verify inventory regularly (at least twice a year and preferably quarterly), particularly during and after an incident. Replace missing and expired materials and resterilize existing equipment. Detailed information about kits and sample lists are included at the CIFOR Clearinghouse at

Box 3.1. Example supplies for food and water sampling kits

- Sterile sample containers (e.g., plastic bags, wide-mouth plastic and glass jars with screw caps, bottles, whirpack bags) and mailing instructions.
- Sterile and wrapped sample-collection implements (e.g., spoons, scoops, tongue-depressor blades, spatulas, spongesticks, swabs, knives).
- Sterile stool sample kits for food workers or cases.
- Sterilizing and sanitizing agents (e.g., 95% ethyl alcohol, sodium or calcium hypochlorite, alcohol swabs), hand sanitizers, and sanitizer test strips.
- Refrigerants (e.g., ice packs), thermometer (0°–220°F), insulated containers.
- Labeling and sealing equipment (e.g., fine-point felt-tip marking pen, roll of adhesive or masking tape, waterproof labels or tags, custody tape).
- Forms, including sample collection and blank laboratory submission forms, chain-of-custody and other forms for documenting activities.

3.3. Resources

www.cifor.us/clearinghouse/keywordsearch.cfm and in the International Association for Food Protection *Procedures to Investigate Foodborne Illness* (<http://www.foodprotection.org/publications/other-publications/>).

3.3.2.5. Outbreak investigation documents

Note: These and other sample documents are available from the CIFOR Clearinghouse at www.cifor.us/clearinghouse/keywordsearch.cfm.

- Chain-of-custody forms.
- Foodborne illness complaint worksheets.
- Blank disease-specific case report forms.
- Laboratory test requisition forms.
- Standardized outbreak questionnaires (available at www.cdc.gov/foodsafety/outbreaks/surveillance-reporting/investigation-toolkit.html).

- Environmental health assessment forms, such as hand hygiene assessment (examples available at www.cdc.gov/nceh/ehs/EHSNet/).

3.3.2.6. Reference materials

- Books, Web resources for support during outbreak (e.g., CDC's Diseases and Conditions A–Z index, FDA's Bad Bug Book).
- Latest version of the American Public Health Association's *Control of Communicable Diseases Manual*.
- *Procedures to Investigate Foodborne Illness*, by the International Association for Food Protection.
- FDA's *Investigations Operations Manual* available at www.fda.gov/iceci/inspections/iom/default.htm.

3.4. Foodborne Illness Complaint Processing

As discussed in Section 4.3.9, having an organized, formal process for receiving and reviewing foodborne illness complaints from the public is a model practice. The complaint processing system should be able to cross-reference information from follow-up of cases identified through pathogen-specific surveillance. Use a standard process to collect information, including a standard intake form. Collect as much information as possible at the initial call. If the complaint is likely to be related to food, obtain an extended, detailed food history from the complainant.

The food history is important because most complainants do not accurately identify the relevant source of exposure. If possible, a single person should receive or process all foodborne illness complaints so patterns can be identified quickly. Alternatively multiple staff could take the calls using standardized data collection forms, which are then reviewed by one person. Staff receiving calls and backup staff should be trained to give appropriate instructions to callers about prevention of secondary spread and seeking health-care services.

3.5. Records Management

3.5.1. Overview

Records management is an important element of successful outbreak investigation and response. Appropriately managed records support the outbreak investigation and control team by giving all team members quick

access to needed information. Requiring team members to use standard protocols for collecting and organizing information associated with an outbreak can serve a quality-assurance role and help ensure that important investigation and response steps are followed. Finally, maintaining good records for

3.5. Records Management

each outbreak can help staff identify what went wrong or worked well during the outbreak and can provide valuable information for improving outbreak investigation and response protocols. All information collected about an outbreak should be organized in an electronic database to allow easy searching and analysis.

3.5.2. Records Management—Model Practices

3.5.2.1. Information collection and sharing

- Identify standardized forms, including illness complaint forms, disease-specific report forms, and trawling interview questionnaires, for recording information about possible cases (examples of such forms are available through the CIFOR Clearinghouse at www.cifor.us/clearinghouse/keywordsearch.cfm). These forms may need to be modified in response to the specifics of the current outbreak.
- Train staff in the use of standardized forms to ensure proper completion by all members of the investigation team.
- Determine how and what information from

forms and questionnaires can be properly and efficiently shared within the investigation team.

- Ensure that data are entered as soon as possible to enhance the ability to analyze as quickly as possible.
- Determine when and how to share outbreak information with the person or organization in charge of the facility implicated in an outbreak.

3.5.2.2. Data tracking and analysis

- Establish an enteric illness log or database to track all illness complaints. A database with templates for rapid data entry and analysis will streamline the data-management process.
- Identify tools used to analyze outbreak data (e.g., Epi Info, SAS). Ensure staff are trained to use these tools.
- Ensure that appropriate electronic records-management procedures are in place, including routine data backups, off-site redundant storage, and disaster recovery procedures.

3.6. Communication

3.6.1. Overview

Good communication is one of the most important factors in successful outbreak investigation and control. At all points in the outbreak continuum—from detection through investigation and response to debriefing—communication is critical. Without good communication, investigations and responses can be delayed, uncoordinated, and ineffective. Furthermore, good communication can help allay agency management and public concerns and improve industry support for actions to control outbreaks. To promote better outcomes, the time before and between outbreaks should be used to lay the

groundwork for communication. This includes developing and updating contact lists, defining communication processes, and establishing relationships with key persons both internal and external to the agency.

3.6.2. Communication—Model Practices

Although these model practices for communication are all recommended, full implementation of all of these practices may not be possible in many jurisdictions because of resource limitations and competing priorities. Implementing as many and as completely as possible will improve the effectiveness of communication.

3.6. Communication

3.6.2.1. Contact lists

Establish and frequently update a contact list (primary phone numbers and alternates, cell phone numbers, 24-hour numbers, home numbers, pagers, e-mail, fax numbers, and addresses) of:

- Core members of the outbreak investigation and control team;
- Other officials inside the agency, such as the chief of the epidemiology unit, director of the public health laboratory, and the agency director;
- Critical contacts in other government agencies;
- Important food industry contacts, including trade associations;
- Key health-care provider contacts; and
- Primary media contacts.

Ensure the contact list is updated at least twice yearly and, when feasible, made available to all stakeholders by electronic (e.g., e-mail updates, shared and secure website) and hard copy (e.g., laminated contact card) formats. This is usually much more difficult than expected and requires tenacity but is critical for mobilizing resources in emergencies.

3.6.2.2. Communication among the agencies and units of the outbreak investigation and control team (e.g., among epidemiology, environmental health, and laboratory)

- Ensure everyone who may be involved in outbreak response knows the other team members.
- Decide on the basis of roles who will be notified when an outbreak is suspected, including any changes in notification according to the nature of the outbreak (e.g., pathogen type, involvement of commercial product) and timing (weekends and holidays versus weekdays).
- Identify the persons who will be responsible

for communication on behalf of their organizational unit (epidemiology, environmental health, laboratory) and for the outbreak investigation and control team.

- Determine how confidential information will be stored and whether and how it can be shared.
- Determine who will receive copies of written reports.
- Establish routine communication among the outbreak investigation and control team members before an outbreak.

Define a formal communication process for agencies of the outbreak investigation and control team for use during outbreaks. Options include daily phone calls and routine e-mail alerts. Developing a consistent approach to internal communications during an outbreak helps everyone on the team know what to expect.

3.6.2.3. Communication with other local, state, and federal authorities

- Identify an agency lead on interactions with local, state, and federal authorities, ideally the lead investigator. Establish procedures for coordinating communication with these entities to provide consistent messaging and accurate information flow.
- Distribute a list of your agency's contacts to other agencies, and obtain their contacts.
- Develop standardized templates and processes (including notification triggers and timelines) for sharing information with other agencies, including who will be responsible for notifying the next level of public health agency.
- Commit to notifying collaborating agencies very early in the outbreak investigation process. Most outbreaks have real or potential multijurisdictional dimensions because they may involve food in interstate commerce or persons living or traveling in multiple counties or states or because the

3.6. Communication

complexity of the investigation requires a multidisciplinary approach.

- Foster working relationships with other agencies, holding joint meetings and planning sessions before any outbreaks.
- Establish processes for participating in multiagency, multijurisdictional conference calls, and train staff in appropriate conference call etiquette.
- Determine how confidential information will be stored and whether and how it can be shared.

3.6.2.4. Communication with local organizations, food industry, and other professional groups (including health-care providers)

- Identify an agency lead on interactions with local organizations and food industry, ideally someone trained as a public information officer and who has appropriate background to answer questions. Establish procedures for coordinating communication with these groups to provide consistent messaging and accurate information flow.
- Create templates for communications with each group (e.g., press releases, fact sheets), focusing on the most common foodborne diseases and customizing by group (e.g., health-care providers, school officials, restaurant managers). Sample materials are available at the CIFOR Clearinghouse at www.cifor.us/clearinghouse/keywordsearch.cfm.
- Create and test tools for rapid communication with each group (e.g., blast e-mails, blast faxes, web-based survey instruments).
- Establish routine communications with each group (e.g., newsletters, e-mails, phone conversations), ensuring they will know with whom to communicate, triggers for reporting, and source of information during a foodborne disease outbreak. Be aware that recipients may ignore such communications, so try to make the communications interesting, relevant, succinct, and infrequent.

- Determine who will communicate with which groups during an outbreak.

3.6.2.5. Communication with the public

- Identify an agency lead on interactions with the public, ideally someone trained in communications. Establish procedures for coordinating communication with the public to provide consistent messaging and accurate information flow.
- Create templates for communications with the public (e.g., press releases, fact sheets), focusing on the most common foodborne diseases. Sample materials are available at the CIFOR Clearinghouse at www.cifor.us/clearinghouse/keywordsearch.cfm.
- Create and test web-based tools for communication with the public (e.g., blast e-mails, survey instruments, social networks).
- Establish relationships with consumer and community groups that may be helpful in disseminating information about foodborne disease outbreaks and disease prevention messages.
- Periodically issue foodborne disease prevention messages or press releases to the public to reduce illness and ensure the public knows with whom to communicate (often their primary-care provider) and from where information will come during a foodborne disease outbreak.
- Establish standard channels of communication (e.g., website, telephone number), and use those same channels each time a public health issue arises about which the public may seek information. Make sure the public knows the source, or publish it where the public is likely to access it.
- Guide staff on how to respond to and communicate with angry food-service workers, managers, and members of the public.

3.6. Communication

3.6.2.6. *Communication with cases and family members*

- Identify persons with clinical training, such as public health nurses or medical epidemiologists, to communicate with cases about the outbreak and actions they should take to protect their health and their family's health.
- Provide these individuals with training in communication for high stress/high outrage situations.
- Establish policies for communication with cases and family members to ensure they receive consistent and appropriate messages.

3.6.2.7. *Communication with the media*

- Identify an agency lead on media interactions, ideally someone trained as a public information officer. Establish procedures for coordinating communication with the media to provide consistent messaging and accurate information flow.

- Obtain media training for primary agency spokespersons.
- Identify contact persons from major local media outlets.
- Periodically hold a media education event to teach new professionals in the community's media market about public health and response to foodborne disease outbreaks.
- Identify routine deadlines and time frames for reporting news through major local media outlets (e.g., the deadline for having news from a press release appear in the evening newspaper).
- Establish standard channels of communication (e.g., website, telephone number), and use those same channels each time a public health issue arises about which the public might seek information.

CIFOR Keys to Success: Focus Area 3—Communications

Contact Lists

- Agency/jurisdiction identifies key persons and organizations related to outbreak response before an outbreak occurs, including members of the outbreak investigation and control team, officials inside the agency, contacts at external agencies (i.e., other local, state, and federal agencies), and the media.
- Agency/jurisdiction establishes and frequently updates contact lists for key individuals and organizations.

Communication Practices

- Agency/jurisdiction has procedures for communicating with key individuals and organizations. Procedures are written and easily accessible by staff.
- Agency/jurisdiction has staff trained in communicating with the media and risk communications.
- Agency/jurisdiction identifies a person(s) responsible for external communications on behalf of the agency/jurisdiction during each outbreak response.

Making Changes

- Agency/jurisdiction conducts a debriefing among investigators after each outbreak response and refines outbreak response planning based on lessons learned.
- Agency/jurisdiction has performance indicators related to communications and routinely evaluates its performance in this focus area.

3.7. Planning for Recovery and Follow-Up

3.7.1. Overview

Part of preparing for outbreak response is planning for the recovery and follow-up stages. Make sure your agency's protocols include standardized processes for recovery and follow-up; these will help ensure that appropriate actions are taken after each outbreak and investigation difficulties are identified and rectified before the next outbreak.

3.7.2. Recommended Practices for Recovery and Follow-Up

- Establish standard protocols for actions that must be taken or results that must be

achieved before an implicated facility or food source can resume normal operations.

- Establish standard protocols for monitoring an implicated facility or food source if post-outbreak monitoring should be deemed necessary.
- Establish a process for creating after-action reports following investigations, with lessons learned and action items for follow-up and quality improvement.
- Detailed information about model practices for recovery and follow-up is included in Chapter 6.

3.8. Legal Preparedness

Ensuring that a given state or local public health agency has developed full legal preparedness for outbreak response provides a foundation for effective response efforts. In this context, a legally prepared health department has a) the laws and legal authorities needed to support all relevant surveillance, detection, investigation, and control activities; b) professional staff who understand and are competent in using their legal authorities; c) memoranda of agreement and other

legal agreements in place for coordinated implementation of laws across jurisdictions and sectors; and d) information about best practices in using law for outbreak response. The agency also should have an attorney on call to help address specific legal issues that arise during an outbreak. See Chapter 9 for details about legal preparedness and ways an agency can develop a legal framework to support its foodborne disease control activities.

3.9. Escalation

3.9.1. Overview

Even though a single agency is likely to be able to independently manage many outbreaks, in other instances the agency will need to—and should—ask for help, particularly because many outbreaks will become part of a multijurisdictional investigation.

A cardinal rule for all foodborne disease response programs: Ask for help earlier rather than later. Don't let the trail grow cold before getting help on the scene. Affected persons recover and forget

details, labs destroy specimens, and food establishments discard product. As noted at the beginning of this chapter, the primary goal of investigations of foodborne disease outbreaks is implementation of control measures as quickly as possible to prevent further illness. To fulfill this goal, an investigation may need to be escalated to involve multiple agencies. Members of the outbreak investigation and control team should frequently ask themselves whether escalation is advisable and should be ready to bring in outside help quickly.

3.9. Escalation

Even an apparently local outbreak may herald part of a much larger problem. This is especially true of an outbreak that appears to be associated with a facility that is part of a regional or national chain or when the suspected food is in general commercial distribution. Other indications of multijurisdictional outbreaks are listed in Chapter 8.

3.9.2. When to Ask for Help

- Scale or complexity of outbreak seems likely to overwhelm agency resources.
- Outbreak is known or suspected to affect multiple counties, states, or countries.
- Investigation points to a commercially distributed product.
- Nature of outbreak (e.g., likely causative agent, affected population, scale) or response is beyond the experience of agency staff.
- Specific technical support is needed that requires expertise not available in the agency.

3.9.3. How to Obtain Help

- Steps in asking for help vary by agency seeking help and the purpose of the assistance.
- At the local level, call the State Epidemiologist or his/her surrogate. Most state epidemiology offices have a 24-hour number and someone on call 24/7.
- At the state level, call the most appropriate office at CDC or the CDC emergency response number, which is staffed 24/7. Emergency response staff will contact the appropriate office at CDC.
- If the suspected product falls under the jurisdiction of one of the food regulatory agencies, call that agency using its 24-hour contact number.
- Be prepared to share as much information about the outbreak as possible including setting of the outbreak, population at risk, suspected etiologic agent, suspected source and agencies involved.

3.10. Incident Command System

3.10.1. Overview

Increasingly, agencies responding to a public health emergency, occasionally including foodborne disease outbreaks, consider using an Incident Command System (ICS) to help coordinate response.¹ ICS structures provide for internal communications within a government system between primary event responders, public information officers, and security and safety officers and for external liaison with various organizations. ICS structures provide for communication and coordination among agencies involved with responding to a multijurisdictional outbreak of foodborne disease.

The role of an ICS response in outbreak investigations varies. Even within a single investigation, some agencies may use an ICS

structure, whereas others do not. In some states and local jurisdictions, ICS are formal structures controlled by public safety officials with no other jurisdiction for food safety or outbreak control, which can distract from the conduct of a public health investigation. However, some public health and food-safety agencies at the local and state levels are starting to embrace ICS and adapting the ICS structure to meet their needs. Federal agencies are required by executive order to use the ICS to address foodborne disease outbreaks so that all relevant federal agencies, as well as state and local governments, are appropriately coordinated and connected with communication and decision-making during emergencies. The ICS framework is integral to the operations of the FDA's RRTs.

3.10. Incident Command System

3.10.2. Definition and History of ICS

The ICS originally was developed in the 1970s to coordinate activities to control wildfires in California. The system has been expanded and integrated into the Federal Emergency Management Agency's National Incident Management System (NIMS) to aid intra-agency and interagency coordination, especially during large-scale emergencies that involve multiple jurisdictions. The ICS features a clearly defined chain of command with common nomenclature for key management positions; defined management sections; and a modular organizational structure; and uses specifically defined emergency response function roles.

ICS, as an integral part of NIMS, is a widely applicable management system designed to enable effective, efficient incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. ICS is a fundamental form of management established in a standardized format, with the purpose of enabling incident managers to identify the key concerns associated with the incident—often under urgent conditions—without sacrificing attention to any component of the command system.

The ICS organizational structure is scalable and develops in a modular fashion according to the size and complexity of the incident, as well as the specifics of the hazard environment created by the incident. Responsibility for the establishment and expansion of the ICS modular organization ultimately rests with the Incident Commander, who bases the ICS organization on the requirements of the situation. As incident complexity increases, the organization expands from the top down as functional responsibilities are delegated.

Homeland Security Presidential Directive 5,

Management of Domestic Incidents, orders the heads of all Federal Agencies to adopt the National Incident Management System (NIMS) in the response to domestic incidents. In 2010, the U.S. Department of Health and Human Services and USDA established an Incident Command System Working Group that developed protocols for the Multi-Agency Coordination Group for Foodborne Illness Outbreaks. This Coordination Group can convene quickly during an outbreak of foodborne illness involving multiple federal agencies to share information, make decisions, and leverage resources (see Section 3.1.2.10).

3.10.3. Context for Use

Agencies involved in foodborne disease outbreak investigation and response should decide in advance whether and how to apply an ICS and, if applicable, incorporate the ICS structure into their response planning. Such planning should be coordinated with all other agencies that may be drawn into the investigation and response over time. Many foodborne disease outbreak investigations do not require formal activation of ICS, but outbreak investigation and control teams will benefit from training in ICS principles and methods.

If a person who claims to have tampered with food contacts an agency, or in any outbreak in which intentional contamination is suspected, notification of law enforcement officials and assessment of the credibility of the threat are essential. If the threat is credible, the outbreak would move into a law enforcement realm with activation of the ICS.

Early inclusion of ICS principles and methods can prevent problems over the long term. Trying to pick up and implement ICS after an incident has expanded creates many organizational issues for all responders involved. In recent years, federal departments and agencies have begun moving toward

3.10. Incident Command System

making adoption of NIMS by state, tribal, and local organizations a condition for federal preparedness assistance, including grants and contracts.

3.10.4. Training

Regardless of whether an agency elects to apply the ICS structure to its foodborne disease outbreak response, it should provide ICS training to the outbreak investigation and control team before any outbreaks. This is a standard requirement for all RRT members.

Ideally ICS training would use foodborne disease outbreak examples so that all team members clearly understand how to use the ICS structure in an outbreak situation. The FDA offers ICS training specifically focused on foodborne disease outbreak response. The RRT Best Practices Manual (Volume 1) includes a detailed chapter on the use of ICS by RRTs, including recommended training ([www.afdo.org/Resources/Documents/6-resources/The RRT Manual_2013_Final.pdf](http://www.afdo.org/Resources/Documents/6-resources/The_RRT_Manual_2013_Final.pdf)).

3.11. Reference

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