

Environmental, Epidemiologic, and Laboratory Investigations

Team Activity 3 ***Case Study*** ***After-Action Conference***



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Welcome to the Tennessee Integrated Food Safety Center of Excellence *Environmental, Epidemiologic, and Laboratory Investigations* Team Activity Facilitator Guide.

This team activity is intended for members of a local outbreak investigation team. It has been designed to further develop the acquired knowledge of public health professionals who have completed the following online courses: *Foodborne Outbreak Investigation and Response Team Roles and Responsibilities: Parts A and B, Initial Foodborne Illness Investigation, Environmental Investigations, Epidemiologic Investigations, and Laboratory Investigations*.

These activities were created around the online courses' learning objectives and they are intended as a complement to the online courses, although they may be used independently if desired. Each of the complementary team activities contains independent or group activities and discussions that will build upon the online coursework and previous team activities. All necessary instructional materials have been provided – worksheets, handouts, and a PowerPoint presentation. After completing all online courses independently and working through the complementary team activities jointly, an outbreak investigation team should have a well-developed set of investigative skills as well as the foundation for a concrete outbreak investigation plan for their jurisdiction.

This team activity is designed to be used by a single local outbreak investigation team. However, if necessary, more than one jurisdiction may meet with a facilitator at once, in which case participants should be seated with others from their corresponding organization as they carry out the team activities.

The “Facilitator Guide” is provided as a tool to assist the facilitator as team members complete and discuss the included activities. The overview on page ii lists necessary supplies and learning objectives for the activity. The left hand column of the guide provides an estimate of time required for each section, to help plan an agenda for completing the activity. Each guide also contains read aloud statements (denoted by bold font), discussion prompts, and possible answers to assist with facilitation.

Make sure to read through all materials prior to facilitating the activity. We hope your group enjoys this hands-on, team-building activity!

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Activities	Part I Case Study	Part II Debrief – After-Action Conference
Materials	<p><i>Line List</i> <i>Epidemiologic Curve</i></p> <p>Team activity PowerPoint</p> <p><u>Team members should each be provided a copy of the Participant Guide which contains these documents.</u></p>	<p><i>Salmonella After-Action Conference</i></p>
Learning Objectives Addressed	<p>Course 1, Module 3 objectives</p> <ol style="list-style-type: none"> List considerations in dealing with the media about a foodborne disease outbreak. <p>Course 2, Module 2 objectives</p> <ol style="list-style-type: none"> Identify a role-specific response to a local complaint-driven cluster. Explore response to local complaint driven clusters through the review of case studies. <p>Course 3, Module 1 objectives</p> <ol style="list-style-type: none"> Prioritize investigation actions based on characterization of the illness and history of similar outbreaks. Describe how analyzing descriptive data from various sources can support the initial stages of a foodborne illness investigation. <p>Course 3, Module 4 objectives</p> <ol style="list-style-type: none"> Describe how media can be used to support an investigation. Identify how control measures can be implemented during a foodborne illness investigation. <p>Course 4, Module 2 objectives</p> <ol style="list-style-type: none"> Describe methods for overcoming barriers to on-site data gathering. <p>Course 4, Module 4 objectives</p> <ol style="list-style-type: none"> Describe the roles of relevant agencies in product tracing during a foodborne outbreak Investigation. Identify the steps involved in product tracing. <p>Course 4, Module 5 objectives</p> <ol style="list-style-type: none"> Identify specific control measures that can be implemented in facilities when a food is implicated. Describe non-specific control measures that can be implemented in facilities where the specific food has not been identified. 	

**Learning
Objectives
Addressed,
continued**

Course 5, Module 1 objectives

4. Define and describe how to do case finding.
5. Explain the process of epidemiologic information gathering.

Course 5, Module 2 objectives

1. Describe the tools and process of interpreting data using time, person, and place elements.

Course 5, Module 3 objectives

4. Explore epidemiologic data interpretation to support causation and decision-making during outbreaks.

Course 6, Module 2 objectives

1. Describe the importance of advance communication with the laboratory.

Course 7, Module 1 objectives

3. Explain the purpose of an After-Action Review

Activity:	Case Study																				
Materials:	<i>Line List</i> <i>Epidemiologic Curve</i>																				
Learning Objectives:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #ffff00; text-align: center;">C1. M1.3</td> <td style="background-color: #ffff00; text-align: center;">C1. M2.1</td> <td style="background-color: #ffff00; text-align: center;">C1. M3.1</td> <td style="background-color: #ffff00; text-align: center;">C2. M2.2</td> <td style="background-color: #ffff00; text-align: center;">C2. M4.1</td> </tr> <tr> <td style="background-color: #ffff00; text-align: center;">C1. M1.4</td> <td style="background-color: #ffff00; text-align: center;">C1. M2.2</td> <td style="background-color: #ffff00; text-align: center;">C1. M3.2</td> <td style="background-color: #ffff00; text-align: center;">C2. M2.3</td> <td style="background-color: #ffff00; text-align: center;">C2. M4.2</td> </tr> <tr> <td style="background-color: #ffff00; text-align: center;">C1. M1.5</td> <td style="background-color: #ffff00; text-align: center;">C1. M2.3</td> <td style="background-color: #ffff00; text-align: center;">C1. M3.3</td> <td></td> <td style="background-color: #ffff00; text-align: center;">C2. M4.4</td> </tr> <tr> <td style="background-color: #ffff00; text-align: center;">C1. M1.6</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	C1. M1.3	C1. M2.1	C1. M3.1	C2. M2.2	C2. M4.1	C1. M1.4	C1. M2.2	C1. M3.2	C2. M2.3	C2. M4.2	C1. M1.5	C1. M2.3	C1. M3.3		C2. M4.4	C1. M1.6				
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C1. M1.6																					
Getting Ready (~5 minutes)	<ul style="list-style-type: none"> Remind participants that this team activity is based upon learning objectives found throughout the first 6 courses in the online series, <i>Foodborne Outbreak Investigation and Response</i>. This activity consists of a case study that will require approximately 1 hour to complete. 																				
Case Study (~60 minutes, group work)	<ul style="list-style-type: none"> Read the following information to the group: <ul style="list-style-type: none"> “On October 12th, your health department receives a complaint of fever and diarrhea after eating at a local restaurant on October 10th. The initial complainant is interviewed by the Environmental Health (EH) Specialist that took the call. EH contacts Epidemiology to discuss and pass on the details of the complaint. The complainant is re-contacted by Epidemiology to gather additional details about their illness and agrees to provide contact information for additional ill members of their party, which includes a spouse, an adult child, and two other family friends. After completing an initial interview, including a 3-day food recall, with a total of five ill individuals, there appears to be a noteworthy association with the restaurant the initial case called to complain about. Your team discusses the situation briefly by phone and decides to initiate an investigation.” Ask participants to discuss as a group whether this is considered an outbreak or a cluster. Whether the group determines that this is an outbreak or cluster investigation, who should be involved? What are their roles and responsibilities? How will team members be contacted and an initial meeting convened? How soon should an in-person meeting happen? <ul style="list-style-type: none">  If participants need assistance in building a discussion, use the following questions for prompting: <ul style="list-style-type: none"> Is the team pre-established? Or is it selected each time based on 																				

**Case Study,
continued**

- the situation?
 - If a team is pre-selected, why were these members selected? Who selected them?
 - Does the team establish specific investigation goals and/or planned accomplishments?
 - What other departments/agencies/jurisdictions might be involved?
- What should the next steps of the investigation be?
- Once the group has begun to finalize discussions, read the following information aloud to participants:

“Environmental Health, Epi, and Nursing team members decide that an assessment of the implicated restaurant should be undertaken. EH is able to provide information regarding previous inspections of the restaurant and states that the restaurant is a popular one with a history of only minor infractions. The EH specialists make arrangements to go to the site as soon as possible, before the evening’s dinner crowd arrives. Meanwhile, Epidemiology alerts the Laboratory to the unfolding situation and the possibility of receiving stool specimens. Only two of the ill individuals reported receiving medical attention and submitting stool samples for testing at their doctors’ offices. Results have not yet been reported. Nursing staff ensure specimen collection kits are available in case additional ill individuals agree to provide specimens.”
- Ask participants to discuss next steps.
- When will the group reconvene? How might findings from the environmental assessment or from the lab results determine the next steps of the investigation?
- In your experience, how likely is it that your team will receive additional stool specimens from the ill individuals? What might your team members do to encourage submission of more specimens without overwhelming hesitant cases?

Case Study,
continued

- Read the following information to the group:
“The following day, October 13th, your group reconvenes to discuss the findings of the environmental assessment. The EH Specialist noticed no critical violations or improper cooling, holding or handling procedures. EH Specialists interviewed the manager and all employees. None reported illness. The employees who were present at the time of assessment recreated their processes and no improper practices were noted.

No additional stool specimens have been received, but preliminary lab results have been submitted by the reference lab used by the doctors’ offices. Both specimens tested positive for *Salmonella*.”

- Ask participants to discuss as a group whether this is now considered an outbreak or a cluster. What are the next steps for the investigation?
- Once the group has decided on its next steps, ask the participants to share. Make sure the following steps are mentioned/discussed:
 - Epidemiology: case definition, tools (hypothesis-generating questionnaire), notify lab of possible samples, and conduct active case finding
 - Environmental: facility assessment, notify lab and epidemiology of possible findings and samples, work with Epidemiology to identify possible sources and determine if food embargo or food sampling is needed
 - Laboratory: communicate with team regarding environmental test results (if applicable), prepare media/instruments for other specimens, provide input regarding specimen collection and handling
- After the group shares their proposed next steps, read the following information:
“With the investigation underway, Epidemiology begins to design a questionnaire to more carefully assess foods consumed at the restaurant. Environmental Health provides a copy of the restaurant’s menu obtained during the assessment. The Laboratory prepares to receive isolates from the reference lab for confirmatory testing.

The Laboratory also reports that four additional *Salmonella* cases have been identified in your health jurisdiction. Demographics available to the lab are limited and do not indicate any immediate relationship between the cases.

Case Study,
continued

Epidemiology works closely with Nursing to begin further investigation of these cases. The increase in *Salmonella* cases is unusual for October, but in spite of their illness it is difficult to contact individuals during work hours to complete case reports.

The newly reported cases are from three adjacent counties, and range in age from 25-60 years.”

- Ask participants what the next steps are for the restaurant investigation.



If participants need assistance in building a discussion, use the following questions for prompting:

- Who else will Epidemiology interview? Are there more cases?
 - How might Epidemiology carry out active case-finding?
 - How much time can/should be dedicated to the outbreak situation in light of other priorities such as the new *Salmonella* reports?
 - Are these additional cases likely to be related, either to each other or to the previous cases?
 - What does your team know and not know at this point?
- After the group shares their proposed next steps, read the following information:
“Your investigation team decides to have Epidemiology pursue active case-finding by reviewing receipts from the restaurant. Based on the preliminary reports of *Salmonella* and the date on which the complainant ate at the restaurant, the questionnaire is updated to include a question about having eaten at the restaurant between October 9th and October 11th. Receipts are requested for the same 3-day period.

Late that afternoon, EH picks up the receipts from the restaurant and Epidemiology begins deciphering signatures and attempting to find phone numbers to match the names.”

- Ask participants if their outbreak team believes they know what could be causing the outbreak associated with the restaurant. Are there any possible food sources that stand out or that are common sources in your experience? Are there any specific next steps your outbreak team should complete at this time?
- What are the other team members working on at this point? How long will this step in the investigation be expected to take? What are the team members’ plans for communicating findings?

Case Study,
continued

- After discussion, read the following information to the group:
“Your team reconvenes on the afternoon of October 15th to review the status of the investigation.

Through active case-finding, your team was able to identify 3 additional cases associated with the restaurant. Two of these additional sick individuals sought medical attention and had stool specimens collected and sent to the local laboratory. By talking to well meal companions and other non-ill restaurant patrons, your team was able to compare items eaten by well and sick individuals to try to find out what made people sick. This is known as a case/control study. Although small, the case/control study indicates consuming beef was associated with illness.

Your team is also able to compile a line list and an epidemiologic curve for the cases.”

- Ask participants to review the Line List included in their packets.
- Ask participants to review the epidemiologic curve included in their packets while discussing when the infection most likely began. Do they think this outbreak is ending or ongoing? What information in these sources corroborates the group’s appraisal?
- Ask participants to discuss what the next steps should be, if any.
- After discussion, read the following information to the group:
“The team decides that Environmental Health should revisit the restaurant and follow up on the source of the beef. If any remains from the lot served between October 9th and 11th, it will be embargoed and sent to the lab for testing.

Team discussion then turns to the other, seemingly unrelated *Salmonella* cases. Case reports for these cases have been somewhat delayed, but it has been discovered that three of the four individuals work in the same business complex and ate at a nearby market for lunch in the seven days prior to illness. Onset of individuals’ illnesses ranged from the evening of October 5th to October 8th and reported symptoms were abdominal cramps (3), fever (2) (avg. 101°F), diarrhea (4), and vomiting (2).”

Case Study,
continued

- Ask participants what the next steps for the investigation should be given this new location associated with a similar illness. How might the outbreak team investigate whether others in the community might be infected? What systems might be used to detect similar cases of exposure?
 - If participants need assistance in building a discussion, use the following questions for prompting:
 - What specific surveillance systems do you currently use?
 - Who reviews these systems? How frequently are they reviewed?
 - At what point do you need to notify surrounding jurisdictions? , How might you go about doing that? And whose role is it to do so?
 - How can you elicit information about community-wide illness?
 - What impact would media involvement have on the investigation?
On the restaurants?
- Now, read the next bit of outbreak information to the participants:
“Your team decides that the common exposure among the newly reported *Salmonella* cases merits investigation as well and chooses to send an Environmental Health Specialist out to conduct an assessment at the Market (Restaurant B) and to interview employees. It is decided that care should be taken to assess any food items similar to the implicated beef from Restaurant A.”
- Ask participants to share their thoughts on a possible source of contamination and what their next steps should be.
- As participants discuss, listen for mention of investigating others that might be ill now, other agencies to involve, what their next steps might be, and any plans to modify the approach to the outbreak.

Case Study,
continued

- Read the following outbreak information to the group:
“During an outbreak update meeting the following week, the EH Specialists provide details from their visits to both restaurants. At Restaurant A, the beef was found to have purchased locally in small lots and there was no additional product remaining from the exposure period.

Another EH Specialist reports the results of his assessment of Restaurant B. According to the manager there had not been any ill food handlers and the restaurant had not received any reports of illness. When completing his assessment, the EH Specialist planned on gathering a menu for epidemiology; however, he noticed that the menu changes daily based on what the chef can purchase at the local farmer’s market. The Chef’s special for the week in question included a locally-raised grass-fed beef hamburger.”
- Ask participants to share their thoughts on how to proceed. Should the two investigations be collapsed into one? What information might be needed to make such a decision? What steps should be taken at this point? Do any other agencies need to be alerted?
- Read the next phase of outbreak information to the group:
“As the team continues to investigate the outbreak during the remainder of October, the number of cases appears to decrease significantly. Meetings are held less frequently and most communication is carried out by e-mail and occasional telephone calls. Environmental Health staff and a local USDA inspector meet with a local beef processor who supplied both the Restaurants A& B with the beef implicated in the investigations. Environmental Health is able to collect samples and both inspectors note places for improvement; however, there are no major areas of concern noted. Together, USDA and Environmental Health educate the owner and his workers on proper processing practices, storage, and transportation.

Unfortunately, the local media becomes aware of the intervention and reports that the government is trying to close down a small local processor due to an outbreak. Requests for information regarding the investigation must be addressed.”
- Participants are asked to discuss how they would handle the situation with the local media? Who would be in charge of this issue? Who would be in charge of communicating with the media? With the processor?
- What other steps need to be taken to finalize the investigation?

**Case Study,
continued**

- Read the final outbreak information to the group:
“As the investigation prepares to wrap up, each part of the team completes their assigned tasks:
 - **Epidemiology compiles the data, ensuring the line list and epi curve are up-to-date and beginning the final report.**
 - **Environmental Health reviews assessment records and offers the restaurants appropriate training opportunities. The EH staff also prepare their required reports.**
 - **The Laboratory provides final results for all cases and additional subtyping test results and enters pattern subtype information into PulseNet.**

The team continues to correspond by e-mail and schedules a hotwash for all team members to attend to determine the strengths of the investigation and areas for improvement. Findings from the hotwash may also be incorporated into the final outbreak report.”

Discussion
(~10 minutes,
group work)

- Tell the group that they have completed their outbreak investigation.
- Ask participants to share where their outbreak team excelled most and why?
- Where did the team **not** succeed during this investigation?
 - Was there anything they forgot to do?
 - Anyone they forgot to inform along the way?
 - How they might improve for future outbreaks?

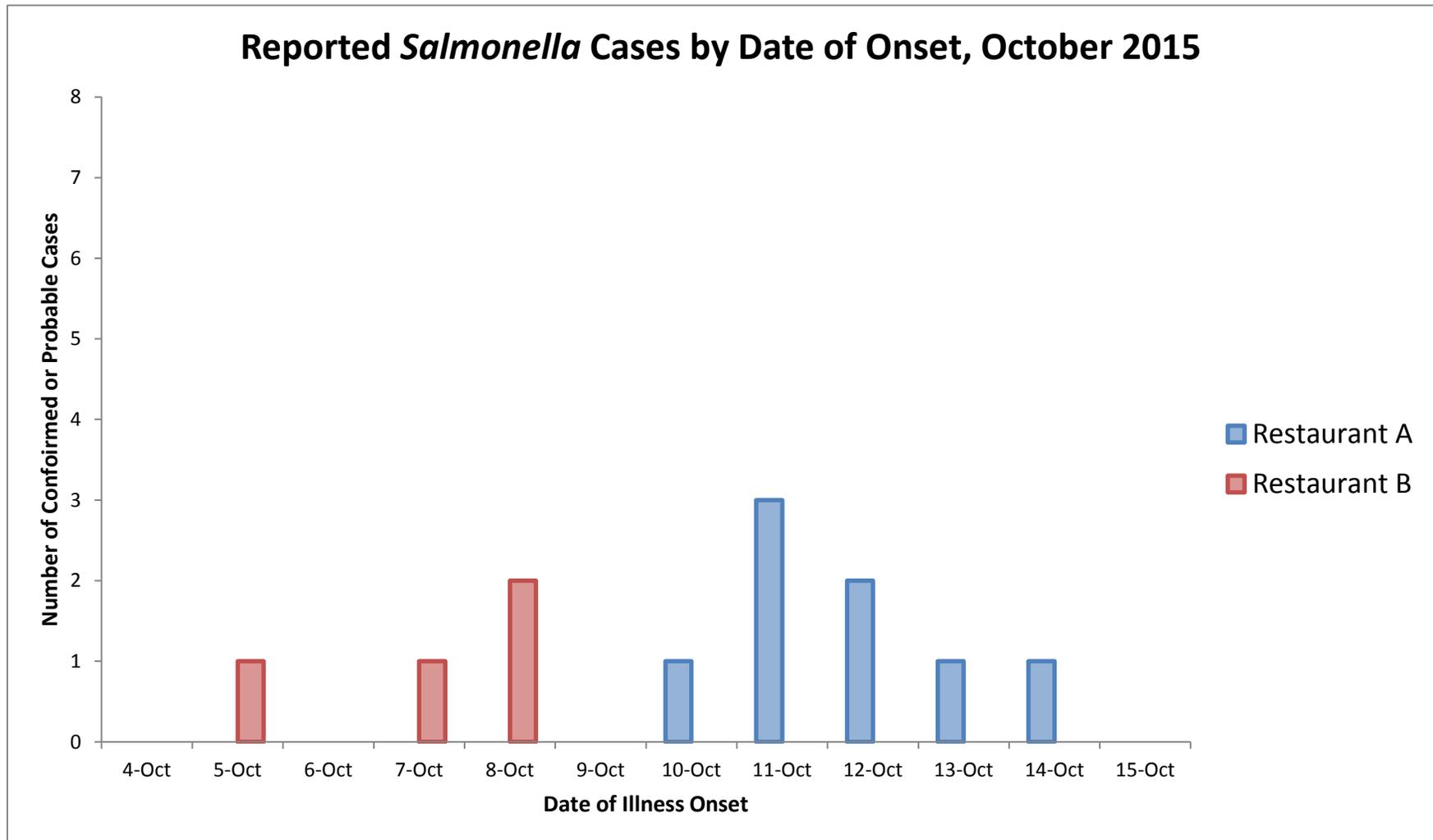
Line List

Reported Cases (Confirmed and Probable) Associated with Restaurant A

Case No.	Onset Date	Symptoms/signs	County	Suspected Food	Locations food eaten within 72 hrs.	Water Source	Other Exposures	Other Ill; Relationship	Comments
001	10/11	Fever, Diarrhea	Knox		Restaurant A	City	Lake	Yes; spouse	
002	10/12	Abdominal Cramps, Diarrhea, Vomiting	Knox		Restaurant A; Office Bldg. lunch room	City	Lake	Yes; spouse (case 001)	
003	10/11	Abdominal cramps, Diarrhea	Blount	Egg salad	Knox Grab-n-Go; Restaurant A	Well	Lives on a farm	Yes; parents (cases 001 & 002)	<i>Salmonella</i> , undifferentiated
004	10/12	Vomiting, Diarrhea	Knox	Chicken	Cafeteria; Restaurant A	City	Young child in home	Yes; friend (case 003)	
005	10/10	Diarrhea	Knox		Quik Stop Café; Restaurant A	City		Yes; friend (case 003)	<i>Salmonella</i> , undifferentiated
006	10/14	Diarrhea, Vomiting	Knox	Beef-a-roni	Restaurant A	City		No	<i>Salmonella</i> Newport isolated from stool
007	10/13	Fever, Diarrhea	Blount		Restaurant A	City	Chickens	Yes; Boyfriend	<i>Salmonella</i> Newport isolated from stool
008	10/11	Diarrhea	Sevier		Restaurant A; Lil' Chicken Shak	Spring		No	

Epidemiologic Curve

Reported *Salmonella* Cases (Confirmed and Probable) Associated with Restaurants A & B



Salmonella After-Action Conference

A Hotwash Activity

Before participating in an After-Action Conference (AAC), the following need to occur:

1. Identify all agencies and persons involved in the event.
2. Contact each identified person to complete a pre-conference questionnaire.
3. Submit pre-conference questionnaire responses to the AAC Facilitator. The AAC Facilitator should be a party uninvolved in the investigation, who has experience in conducting After-Action conferences and, preferably, outbreak investigations as well.

In preparation for a conference, all submitted responses should be anonymously compiled. During the conference, the AAC facilitator will lead everyone through a discussion of each question's responses.

Example of a Pre-Conference Questionnaire

After-Action Conference	Outbreak Identifier	
<h3>After-Action Conference (Hotwash)</h3>		
<p>Directions: Please complete the sections below to the best of your ability and return to the ACC Facilitator by (date).</p>		
<p>Identifying Successes <i>“Which processes or protocols performed as expected?”</i></p> <ul style="list-style-type: none">•••		
<p>Identifying Areas for Improvement <i>“What didn't go well, or can be improved upon?”</i></p> <ul style="list-style-type: none">•••		
<p>Identify Areas of Opportunity: <i>“What opportunities are available to help facilitate an improved response?”</i></p> <ul style="list-style-type: none">•••		
After-Action Conference	Conference Date	Overall Governing Agency