A silhouette of a person holding a magnifying glass

Description automatically generated

***Campylobacter***

**Trainer Guide**

**Version 1.0**

**About This Guide**

This Trainer Guide provides a master reference document to help the Trainer to deliver Understanding the Root Cause of an Outbreak: Campy.

Have this guide printed and in front of you for all deliveries. It is imperative that the guide is printed in color in order to not miss important cues in the text.

**What you will find in the guide**

This Trainer Guide is a comprehensive package that contains all facilitation materials for the Training program, including:

* checklists of necessary materials and resources (slides, web page addresses, etc.)
* presentation scripts and key points
* instructions for managing time and discussions
* guidelines for the Producer to support the Trainer
* key indicators to help facilitate virtual delivery, when applicable

The sessions are designed to support participant’s interest, encourage activity, and leverage the use of technology during virtual delivery with both the Trainer and one another. Chat and verbal feedback should be encouraged during virtual delivery. In preparation for each session, review the guide and enhance or adjust based on audience needs.

**Exercises / Activities**

It is advised that groups are not composed of more than 8 people during breakout exercises or activities. An “Answer Key” is provided to participants on slides and by the Trainer at the end of an exercise or activity. Answers are reviewed after each activity and an answer key is provided to participants at the end of the session.

**NOTE**

The Workbook provided to participants is theirs to keep. Encourage participants to use their Workbook to take notes.

The following trainings are suggested PRIOR to attending the Learning Lab:

* **From Inspector to Investigator: Finding the Factors that Lead to Foodborne Outbreaks** [<https://www.youtube.com/watch?v=pWEywTiX3Sw>] *(An introduction to contributing factors.)*
* **EATS** training [<https://www.cdc.gov/nceh/ehs/elearn/eats/index.html>] *(A lengthy course that provides a good introduction to skills needed to investigate outbreaks of foodborne illness in restaurants. This course is commonly recommended for new investigators.)*
* The **Contributing Factor Definitions** [<https://www.cdc.gov/nceh/ehs/nears/cf-definitions.htm>] and **Environmental Antecedent** (*Field Guide to Identifying Root Causes*) [<https://www.cdc.gov/nceh/ehs/nears/docs/field-guide-to-identifying-root-causes-508.pdf>] resources mentioned in the Workbooks are publicly available. For instructor-led sessions, provide a printout of at least two (2) per group table (pod).
* QR Codes are included in the Contributing Factor Definitions and Environmental Antecedent resource materials.

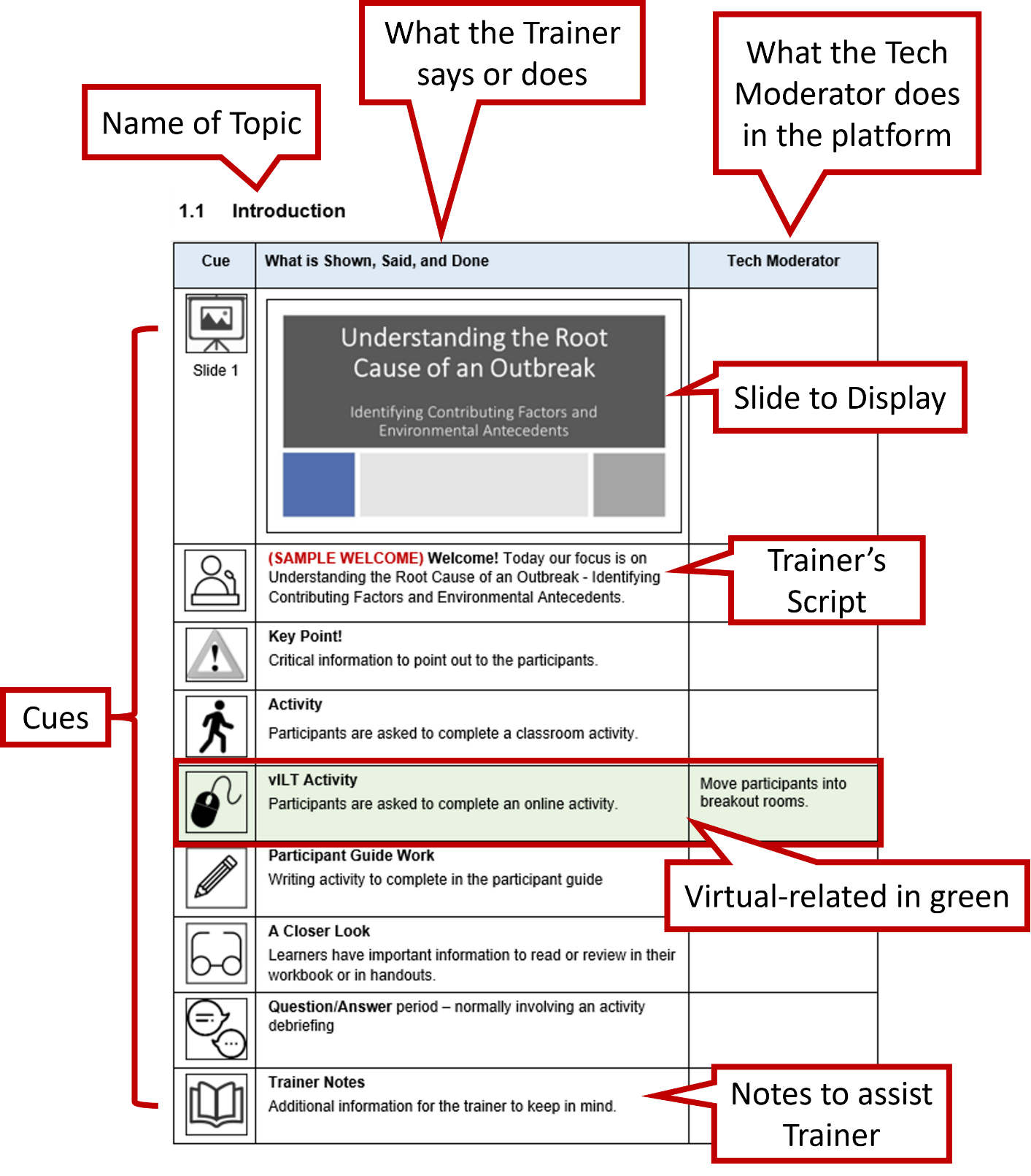
**What you will NOT find in the guide**

This guide assumes that the Trainer is familiar with the synchronous delivery platform/technology. This guide does not include technical directions for the use of such technology.

See the platform’s manual or guide for assistance with the technology.

**How the guide is laid out**

The page format is arranged to assist you in facilitating, in the following ways:



Getting Started

Using the Trainer Guide

|  |  |
| --- | --- |
| speaker icon | How is the text laid out in this Trainer Guide?  Every action in the training is described in this guide by a text block like this one, with a “cue” icon in the left-margin, a title line, followed by information. The icons are designed to help catch your eye and draw quick attention to what to do. In this example, the icon to the left is an indicator that the trainer will say something. The title line is a descriptive topic label followed by a script, instruction, or key points to address with participants. A complete list of the visual cue icons used in this guide is provided below.  **Tech Moderator**  The tech moderator has a critical role in a virtual setting. The role of a Tech Moderator is to make sure that the platform and settings are correct for the course to function smoothly for both the instructor and the participants. They communicate instructions using simple language and ensure a smooth virtual experience. The Tech Moderator will review all the details with the training Trainer prior to the session to walk through the flow, activities, run a final tech check, and discuss any backup plans.  The Tech Moderator works collaboratively with the Trainer to assist attendees in joining the session, moderating break out rooms, and monitoring the chat area for technical questions. Additionally, the Tech Moderator may assist with ensuring documents are successfully uploaded to the chat area.  Instructions for the Tech Moderator are described in this guide under the Tech Moderator column.  Ideally, the Trainer will introduce the Tech Moderator in the beginning to make sure all participants know who to turn to for potential technology issues. |

Graphic Cues

|  |  |
| --- | --- |
| slide icon | Slide to be shown. |
| speaker icon | **Instructor speaks** |
| **notes pages icon** | **Instructor Notes** |
| eyeglasses icon | **A Closer Look**  Learners have important information to read/review. |
| pencil icon | **Participant Guide Work**  Writing activity to complete in the participant guide |
| **alert icon** | **Key Point!**  Critical information to note |
| **conversation bubbles icon** | **Question/Answer** period – normally involving an activity debriefing |
|  | **Activity**  Participants are asked to complete an activity. |
|  | **Shaded areas apply to vILT delivery format** |
| document icon | **Resource or Quick Reference Guide (Give the Name)**  A Quick Reference Guide is available |

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# Understanding the Root Cause of an Outbreak

## Identifying Contributing Factors and Environmental Antecedents – Getting at the Root Cause of an Outbreak

### Introduction

| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| --- | --- | --- |
|  | **vILT Start-up.** | Start the platform virtual meeting.  Set the Host and Co-hosts.  Mute attendees on entry.  Ensure attendees can’t unmute.  Make sure no one else can present.  Check audio & video with presenter(s).  Introduce yourself and your role.  Share contact information for any possible technical matters  Display the slide. |
|  | **Activity – Practice Use of Chat and Reaction Features**  Participants are asked to test their use of the chat area by posting their location. | Monitor the chat area for potential questions or technical issues. |
| **alert icon** | **Key Point!**  Trainer takes the lead over sharing and advancing slides.  Review any logistical housekeeping matters, such as:   * breaks * messages (phone, text, emergencies, etc.) * introduce/review training Resources |  |
| document icon | **Resource**  Resources to be referenced during the training:   * Workbook * IAFP Key A * CIFOR Agent List * Contributing Factors: [NEARS Contributing Factor Definitions | EHS | CDC](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.cdc.gov%2Fnceh%2Fehs%2Fnears%2Fcf-definitions.htm&data=05%7C01%7Cnicole.hedeen%40state.mn.us%7Ce06e2568272d45b1eef908daa2202dba%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C638000556492839284%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=MBuPOIpF1pXiI3NvY3L%2F8lvA94dyPpOfpzUgRRhBIZs%3D&reserved=0) * Environmental Antecedent Field Guide | Be prepared to post documents in chat or email them directly to participants who may be missing a resource. |
| slide icon  Slide 1 |  | Pass the lead to the lead Trainer. |
| **speaker icon** | **Welcome!** Today our focus is on Understanding the Root Cause of an Outbreak – Getting to the Root Cause of an Outbreak. – Campy. |  |
| slide icon  Slide 2 |  |  |
| **speaker icon** | This PowerPoint and the resources we’ll go over has been a collaboration between the CDC and state and local jurisdictions who are part of the Environmental Health Specialists Network, also known as EHS-Net. EHS-Net is a collaborative forum of environmental health specialists that researches restaurant food safety policies and practices. You can see the current EHS-Net sites on the map on the screen. |  |
| slide icon  Slide 3 |  |  |
| **speaker icon** | (*Explain the purpose of the workshop. Review the training learning objectives and introductory section from the Learner Guide.)*   * Identify and utilize resources and tools to aid in conducting an outbreak investigation * Gain skills and abilities to use evidence and findings from an environmental assessment to identify outbreak contributing factor(s) * Practice asking the “5 whys” to understand why those contributing factors occurred * Employ critical thinking to identify appropriate environmental antecedents * Describe best control measures to prevent future outbreaks   We will use scenarios and give you opportunities to complete exercises to reinforce steps. And finally, we will review together the processes and give you plenty of opportunity to offer contributions about your experiences. |  |
| slide icon  Slide 4 |  |  |
| **speaker icon** | So, here’s the plan for today. We’re going to be walking you through some investigation principles and newly developed resources and then using them to work through an outbreak scenario that is based on real life events. You’ll also be able to work in a breakout group through 3 exercises. |  |

### Outbreak Investigations

|  |  |  |
| --- | --- | --- |
| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| slide icon  Slide 5 |  |  |
| speaker icon | * As you know, outbreaks involve an agent, the environment, and a host. * And their investigations require collaboration from epidemiology, laboratory, and environmental health. * Today we’re focusing on guidance for the environmental health specialist to gather data on the environment which allowed the agent to infect the host. When we understand why this happened, we can work on prevention for the future. |  |

### Investigative Process

|  |  |  |
| --- | --- | --- |
| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| slide icon  Slide 6 |  |  |
| speaker icon | This is a great visual of how we work through several layers to get to the root cause of the outbreak and ultimately work to prevent it from happening again. The “What” is typically the agent, which comes from the Lab or Epi. Then, the environmental health specialist works to understand how it happened and what underlying scenarios were in place that allowed it to happen. Let’s pair this with an example. |  |
| reading eyeglass icon | **A Closer Look**  Carefully review the different factors in your participant guide that are considered when trying to understand what, how, and why an outbreak happened. |  |
| slide icon  Slide 7 |  |  |
| speaker icon | Let’s go through a classic outbreak scenario. Maybe the “What” is *Salmonella* in the salad. I think the general public thinks this is where the investigation stops--great, you found it, the end. But we really want to dive in deeper.  So, with further investigation we find that maybe the bowl used to marinate the raw chicken wasn’t cleaned and sanitized properly before being used again to dress the salad. That’s our contributing factor. Again, some people might think that this would be the end of the investigation. But we want to dive deeper again.  Why was this even possible when we know that’s dangerous? Ok, because maybe they have new staff coming in all the time without proper training. Those are our environmental antecedents.  Now we have a clear idea of what’s going on in this kitchen and what control measures to push for to prevent it from happening again |  |

### Environmental Assessments

| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| --- | --- | --- |
| **slide icon**Slide 8 |  |  |
| speaker icon | The environmental health specialists’ main tool for figuring out how and why (the contributing factor and environmental antecedent) is the environmental assessment. An environmental assessment is a structured investigation the environmental health specialist performs.  Environmental assessments are different from routine inspections because they are targeted. Go in with a specific idea as to what may have caused the outbreak and look for information to confirm or disprove that hypothesis.  Environmental assessments can include, but are not limited to:   1. Staff interviews 2. Observing food prep and cooking 3. Reviewing relevant records, such as cooling logs, inventory receipts, etc. 4. Taking food samples or swabbing surfaces in the kitchen |  |
| slide icon  Slide 9 |  |  |
| speaker icon | The focus of the observation will vary depending on what information is known when you go in. For example, if you have an agent or pathogen identified but no known food, then you’ll focus on the risk factors for that pathogen. For example, if you know it’s *Listeria*, you’ll look at long-term refrigeration practices and expiration dates. But if it’s *Clostridium* perfringens, you’ll look at cooling practices.  Other times, you may know the food item but not the agent, in which case you’ll work through a food flow of that item, starting from when it enters the facility to when it is served to the customer. |  |
| slide icon  Slide 10 |  |  |
| speaker icon | When interviewing, things to keep in mind   1. What was going on during the time of exposure when the individuals got sick? Were there any major events? Who was working? Were there any menu or process changes? 2. Keep the hypothesis in mind – if the question isn’t going to give us information we need; skip it! 3. Discuss employee health – were any employees out sick around that time? How about in the days before or after? Was anyone sick at work? 4. Empower the managers – they know their restaurant the best. Ask them what they think might have happened. 5. Ask 5 why’s – Continue asking probing questions, the more you ask the better the chances you get to the underlying cause |  |
| slide icon  Slide 11 |  |  |
| speaker icon | A major resource for getting your investigation program running is the CIFOR Guidelines for Foodborne Disease Outbreak Response. CIFOR also created the Outbreaks of Undetermined Etiology (OUE) Agent List which organizes and outlines pathogens symptoms, incubation periods, and the notable exposures to focus on. This is great for helping you develop your hypothesis and focus before you go into the restaurant on your environmental assessment. In the first exercise, you will have the opportunity to apply this guide to the outbreak. |  |
|  | **vILT** | * Drop the CIFOR Guidelines for Foodborne Disease Outbreak Response Agent list and/or link into the Chat. |
| document icon | **Resource:**  CIFOR agent list: <http://cifor.us/uploads/resources/CIFOR-OUE-Agent-List_FINAL.pdf> |  |
| slide icon  Slide 12 |  | * Continue monitoring the Chat area for potential questions or technical issues. * Zoom in on the details of the table if the trainer requests. |
| speaker icon | Here’s another free resource available to you for determining your focus when you conduct your environmental assessment. Your epi or lab team may identify the agent or pathogen. Then you can look it up on the IAFP keys to understand the risk factor. There are keys for many different implicated food items, which are then broken down into more specific food items and pathogen.  We’re focusing on the retail environment, but it could be used for earlier stages in the food process.  Example of *Salmonella* in salad – we can see that we should be focusing on cross-contamination, improper cleaning of equipment, inadequate refrigeration, prolonged storage, and holding temperatures |  |
| **alert icon** | **Key Point!**  Carefully review the Key located in the top left corner of the IAFP Resource for Identifying Contributing Factors |  |
|  | **vILT** | * Drop the link to the IAFP Keys into the Chat. |
| document icon | **Resource:**  IAFP Keys: <https://www.foodprotection.org/upl/downloads/publications/other/free-procedures-keys.pdf> |  |

### Tabletop Exercise 1

| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| --- | --- | --- |
| slide icon  Slide 13 |  |  |
| speaker icon | **Introduce Tabletop Exercise 1 Activity**   * Find your workbook and open it up to the first page which should provide information on the outbreak. * This notebook is yours to take, so please write in it and take notes if you’d like. * As we mentioned at the beginning, we’ll be walking through one outbreak scenario, and we’ll have three exercises to complete. |  |
| reading eyeglass icon | **A Closer Look**   * Find your Workbook and open it to the first page which should provide information on the outbreak. * This Workbook is yours to take, so please write in it and take notes if you would like to. |  |
| slide icon  Slide 14 |  |  |
| speaker icon | When we break, you’ll review the outbreak information on page 2 of your workbook.  You’ll then use the CIFOR and IAFP resources, which we just went over, to think about the outbreak may have happened. The keys are on page 3 of your workbook.  Then, you’ll answer the questions on page 4 about what information you still need to collect.  Please work with your group for about 10 minutes then we’ll discuss as a whole group. The questions you need to answer on page 4 will also be on the screen. |  |
| **alert icon** | **Key Point**  Break participants into groups. **Remember** – Try to limit the group size to no more than eight (8).   * It is highly recommended to use ONE scenario per learning lab. * Ensure the questions remain displayed for each group to see. * Invite group members to introduce themselves, and begin reading the information in the Workbook. * Groups should work together to answer questions in Exercise 1. |  |
|  | **vILT** | * Place participants into breakout rooms. |
|  | **Activity – Tabletop Exercise 1**   * Use the outbreak information, CIFOR and IAFP resources and keys from your Workbook in the next exercise. * When we break, you’ll review the outbreak information on page 2. |  |
| reading eyeglass icon | **A Closer Look**   * Resourses are on page 3 of your Workbook. * Answer the question on page 4 about what information you still need to collect. |  |
| slide icon  Slide 15 |  |  |
| **A computer mouse with a cord  Description automatically generated** | **vILT** | * Ensure workbook questions appear in each breakout group.   Trainer(s) / Tech Moderator should:   * Bounce from breakout room to breakout room. * Cover any housekeeping or instructions for breakout rooms. * Unmute groups so they can discuss. * Announce a two-minute warning. * End breakout session.   At the end of the breakout session:   * Return participants to the main room. * Pass the lead back to the Trainer. |
| **notes pages icon** | **Instructor Note**  Remind participants to keep in mind the Tabletop Exercise 1 Questions as you guide them through a review of the scenario. |  |
| slide icon  Slide 16 |  | Continue monitoring the chat area for potential question or technical issues throughout this review period. |
| speaker icon | First, let’s review the information we have:  **Outbreak Identification:**   * The cases dined at the same restaurant on May 15th and had no other meal in common leading up to the illness * The health department received the group’s complaint on May 22nd   **Epi Findings:**   * 3 of the 4 cases were interviewed * Their symptoms included diarrhea, fever, abdominal cramps, body aches, and chills * The incubation period was between 1 and 4 days * The duration of illness was between 3 and 5 days * The group ate multiple chicken dishes and *Campylobacter* is the suspected agent. * However, the health department received an independent complaint from another diner who mentioned they had a *Salmonella* diagnosis but investigators weren’t able to reach the individual for an interview. |  |
| slide icon  Slide 17 |  |  |
| speaker icon | Let’s also look at the IAFP key, which explains situations that likely contributed to outbreaks of foodborne diseases when meat or poultry were implicated as vehicles. If we look on the *Campylobacter* line and under Retail Store/Food Service/Home, we can see a few factors to consider including:   * cross-contamination * improper cleaning of equipment * heat process failure | **Optional**: Re-drop the link to the IAFP Keys into the Chat. |
| slide icon  Slide 18 |  |  |
| speaker icon | Let’s discuss Exercise 1  **Observations**   * Preparation of chicken liver, specifically measuring cooking temperatures * Physical flow of raw chicken liver within kitchen to evaluate if there is evidence for cross-contamination * Other poor food safety practices, maybe those related to cross-contamination   **Record Review**   * Temperature logs * Training materials * Recipe cards   **Interview**   * Preparation process of liver to reconstruct food flow. Have the food worker who prepared implicated food walk through process (show you and talk through it). * Ask the manager about oversight of food operations, verification of cooking temperatures, and other food safety practices. |  |
| **alert icon** | **Key Point!**  The list above is not exhaustive of all possible answers. Some participants may have additional observations, record reviews, and interview questions.  There could be many different implicated foods. Encourage investigators to not have tunnel vision. |  |
| **conversation bubbles icon** | **Question/Answer**  Invite group to share the outcomes of their respective group’s findings regarding Observations, Record Review, and Interview. |  |
| **A computer mouse with a cord  Description automatically generated** | **vILT** | * Unmute participants for this Question/Answer period. * Monitor the chat area. |

### Investigative Process Overview

|  |  |  |
| --- | --- | --- |
| slide icon  Slide 19 |  |  |
| speaker icon | Back to our example, let’s continue looking at the how and why, the contributing factors, and environmental antecedents. |  |
| slide icon  Slide 20 |  |  |
| speaker icon | So contributing factors are the “how did this happen” part of the outbreak. They are the preventable causes.  Contributing factors are split into 3 categories:   1. Contamination or ways the pathogen entered the food item 2. Proliferation ways the pathogen was allowed to grow in the food 3. Survival ways the pathogen survived the kill step.   Here are some examples of contributing factors in each category. These all come from a list produced by the CDC.  C9 is contamination from infectious food worker/handler through bare hand contact with food.   * An example of this is an infectious food worker/handler who prepared deli meat without wearing gloves and contaminated the food served to restaurant patrons.   P7 is improper cooling of food.   * An example of this is when foods were refrigerated in large masses or as a large volume of food in containers, which did not allow proper cooling.   S2 is inadequate time and temperature during reheating of food.   * An example of this is reheating of sauces or roasts to a temperature insufficient to reduce the level of contamination below an infectious dose   **Resource:**  Contributing factor list: https://www.cdc.gov/restaurant-food-safety/php/investigations/cf-definitions.html |  |
| slide icon  Slide 21 |  |  |
| speaker icon | You have the contributing factor list on your tables and will use it during the activity.  They can also be found on the CDC website and there is a QR code to the link on the back of your workbook. | Consider dropping the CDC website link or the QR code into the chat area. |
| slide icon  Slide 22 |  |  |
| speaker icon | Next up are the environmental antecedents, or root causes. These are the underlying issues that allowed a contributing factor to happen. Each contributing factor will have at least one environmental antecedent precluding it. They fall into 5 categories: people, processes, equipment, food, and economics. One tool to determine the environmental antecedents is to use the 5 “Whys” – or asking why 5 times until you get to the root cause. |  |
| slide icon  Slide 23 |  |  |
| speaker icon | You have the environmental antecedent field guide on your tables and will use it during the activity. The image on the screen is only one page of the document. You can see that many clues lie in the observation and staff interviews where we used the 5 “Whys”.  The environmental antecedent resource can be found in a smaller and larger size on the CDC website. This medium sized document that we’ll use for the activity can also be found on the QR code on the back of your workbook. |  |
| **alert icon** | **Key Point!**  The environmental Antecedent resource can be found in smaller and larger sizes (smaller size is an infographic and larger size is a training resource) on the CDC website. This medium-sized document (a guide) that we’ll use for the activity can be found on the QR code on the back of your workbook. |  |

### Tabletop Exercise 2

|  |  |  |
| --- | --- | --- |
| slide icon  Slide 24 |  |  |
| speaker icon | Let’s go back to the workbook and we’ll start exercise 2, which has a part A and B. |  |
| **notes pages icon** | **Instructor Note**  This exercise is divided into A and B because attendees will need some information from the contributing factors (2A) to identify the environmental antecedents (2B). |  |
| reading eyeglass icon | **A Closer Look**   * Locate the Environmental Findings on page 5 of your Workbook. |  |
| pencil icon | **Participant Guide Work**   * Page 6 of your Workbook contains questions for you to answer. Be sure to use your Workbook to take notes. |  |
| slide icon  Slide 25 |  |  |
| speaker icon | When we break, you’ll review the environmental findings on page 5.  You’ll then think about some follow-up questions you would ask the manager and/or food worker.  Then, you’ll answer the questions on page 6 about follow-up questions and potential categories for contributing factors and environmental antecedents. You won’t identify them yet, but just determine which categories may be applicable to the outbreak.  Please work with your group for about 10 minutes then we’ll discuss as a whole group. The questions you need to answer on page 6 will also be on the screen. |  |
| **alert icon** | **Key Point!**  Participants will need to first give thought about possible follow-up questions and potential categories for contributing factors and environmental antecedents. You won’t identify them yet, but just determine which categories may be applicable to the outbreak. |  |
| slide icon  Slide 26 |  |  |
| speaker icon | Please work with your group for about 10 minutes. Then, we’ll discuss it as a whole group. The questions you need to answer are on page 6 of your Workbook and will also be on the screen. |  |
| **A computer mouse with a cord  Description automatically generated** | **vILT** | * Ensure workbook questions appear in each breakout group.   Trainer(s) / Tech Moderator should:   * Bounce from breakout room to breakout room. * Cover any housekeeping or instructions for breakout rooms. * Unmute groups so they can discuss. * Announce a two-minute warning. * End breakout session.   At the end of the breakout session:   * Return participants to the main room. * Pass the lead back to the Trainer. |
| slide icon  Slide 27 |  |  |
| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| speaker icon | Let’s review the environmental findings:  **Environmental Findings:**  Inspectors visited the restaurant on May 27th to conduct an environmental assessment.   * During the environmental assessment chicken liver skewers were found to be habitually undercooked, with measured temperatures of 153°F. * When the chef was instructed to cook the livers to 165°F, the chef said he couldn’t serve those skewers because they were overcooked and dry. * Additionally, the employees couldn’t find a metal stem thermometer, and the chef did not know the minimum cooking temperature for chicken * All other chicken dishes were at or above 165°F. * No other hazardous food safety practices (bare hand contact, cross-contamination, etc.) were observed | Continue monitoring the chat area for potential questions or technical issues throughout this review period. |
| slide icon  Slide 28 |  |  |
| speaker icon | What are some follow-up questions you would ask? |  |
| **conversation bubbles icon** | *Note to presenter: guide the discussion based on the answers and encourage additional question to get to an antecedent.* | Continue monitoring the chat area for potential questions and responses, or technical issues throughout this review period.  Unmute groups if they have questions or answers during this time. |
| slide icon  Slide 29 |  |  |
| speaker icon | Here are some good follow-up questions along with their answers and additional questions to consider. |  |
| **conversation bubbles icon** | **Why did the chicken liver make people sick?**  **A**: It was undercooked (not cooked to 165°F).  **Why was the chicken liver not cooked to 165°F?**  **A**: The chef did not want to overcook and dry out food.  **Why does the chef prioritize food quality over food safety?**  **A**: There was a lack of food safety culture demonstrated through poor attitudes towards food safety. Manager prioritized chicken texture over ensuring chicken was fully cooked.  **Why isn’t a metal stem thermometer available?**  **A**: Employees did not know they needed to measure cooking temperatures and did not have the money for thermometer.  **Why does the chef not know about cooking temperatures?**  **A**: Manager was not utilizing plan or process to fully cook chicken livers.  **Other questions:**  Why are employees not trained on cooking temperatures? Why does manager not know about cooking temperatures?  Is manager certified in food safety? Why not? | Continue monitoring the chat area for potential questions and responses, or technical issues throughout this review period.  Unmute groups if they have questions or answers during this time. |
| slide icon  Slide 30 |  |  |
| speaker icon | Let’s move on to part B of exercise 2  You’ll answer the questions on page 7 about contributing factors and environmental antecedents.  Please work with your group for about 10 minutes, then we’ll discuss as a whole group. The questions you need to answer on page 7 will also be on the screen.  Remember, if there are not enough handouts of the contributing factors list and environmental antecedent resource, there are QR codes on the back of your workbook that will pull up the resources. |  |
| slide icon  Slide 31 |  | Ensure workbook questions appear in each breakout group. |
| speaker icon | Please work with your group for about 10 minutes, then we’ll discuss it as a whole group. |  |
| pencil icon | **Participant Guide Work**  The questions you need to answer on page 7 will also be on the screen. |  |
| **conversation bubbles icon** | **DEBRIEF**  After participants have completed page 7 of their Participant Guide Workbook, and BEFORE proceeding to the next slide:   * Invite participants to share their responses. * Facilitate a large-group discussion for responses where there appears to not be agreement. * Make note of points of agreement and disagreement so contributors feel heard.   For items where disagreement remains, acknowledge that many times this can happen and offer insight on how consensus could be reached or supported by the group. |  |
| **A computer mouse with a cord  Description automatically generated** | **vILT** | Place participants into groups to answer 2B:  Ensure workbook questions appear for each group.  Trainer(s) / Tech Moderator should:   * Bounce from breakout room to breakout room. * Cover any housekeeping or instructions for breakout rooms. * Unmute groups so they can discuss. * Announce a two-minute warning. * End breakout session.     At the end of the breakout session:   * Return participants to the main room. * Pass the lead back to the Trainer. |
| slide icon  Slide 32 |  |  |
| speaker icon | Here we have the contributing factors and environmental antecedents listed for each outbreak. We’ll start with the contributing factors.  **Contributing Factors**  C7: The food was contaminated before arriving at the point of final preparation by animal or environmental sources, either pre-harvest (e.g., growing field, harvest area, irrigation water, etc.) or post-harvest (e.g., processing or distribution facility, in warehouse storage, during transit, etc.).  -It is important to note that traceback may implicate the identification of where the food was contaminated (pre-harvest versus post-harvest).  **Environmental Antecedents**  **People**  -Lack of training of employees on specific processes   * + Employees did not know the proper cooking temperature for chicken.   -Lack of a food safety culture/ attitude towards food safety   * + Manager prioritized chicken texture over ensuring chicken was fully cooked.   **Economics**  -Lack of needed supplies for the operation of the restaurant   * + No metal thermometer available.   **Processes**  -Insufficient process to mitigate the hazard   * + Manager was not utilizing plan to fully cook chicken livers.   **Other potential antecedents**  -Lack of oversight of employees/ enforcement of policies   * + Manager didn’t check cook temperatures or enforce these practices.   -Food not treated as TCS (may include non-TCS foods that have been contaminated)   * + Manager was judging doneness of chicken based on appearance. |  |

### Investigative Process Overview

|  |  |  |
| --- | --- | --- |
| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| slide icon  Slide 33 |  |  |
| speaker icon | We’ve identified the how and why and now need to focus on preventing future outbreaks. |  |
| slide icon  Slide 34 |  |  |
| speaker icon | We know why it happened; now how do we prevent it from happening again? This list has a few examples of things to consider. Some are short term; some are long term. Some are enacted by the facility itself and others by the health department. |  |

### Tabletop Exercise 3

|  |  |  |
| --- | --- | --- |
| **Cue** | **What is Shown, Said, and Done** | **Tech Moderator** |
| slide icon  Slide 35 |  |  |
| speaker icon | Let’s go back to the workbook and we’ll start exercise 3 where we will identify some control measures for the establishment. |  |
| slide icon  Slide 36 |  |  |
| speaker icon | You’ll use the control measures lists to think about short- and long-term corrective actions.  Then, you’ll answer the questions on page 8 about what information you still need to collect.  Please work with your group for about 5 minutes, then we’ll discuss as a whole group. The questions you need to answer on page 8 will also be on the screen. |  |
| pencil icon | **Participant Guide Work**  The questions you need to answer on page 8 will also be on the screen. |  |
| **A computer mouse with a cord  Description automatically generated** | **vILT** | Place participants into group to answer Exercise 3 questions.  Ensure workbook questions appear in each breakout group.    Trainer(s) / Tech Moderator should:   * Bounce from breakout room to breakout room. * Cover any housekeeping or instructions for breakout rooms. * Unmute groups so they can discuss. * Announce a two-minute warning. * End breakout session.     At the end of the breakout session:   * Return participants to the main room. * Pass the lead back to the Trainer. |
| slide icon  Slide 37 |  |  |
| speaker icon | Please work with your group for about 10 minutes and then we will discuss as a whole group. |  |
| **conversation bubbles icon** | **DEBRIEF**  Before showing the Exercise 3 Answer Key:   * Invite group to briefly share their results with the entire class. * Facilitate a brief discussion after all groups have shared.   Be prepared to provide clarity if necessary. | At the end of the breakout session:   * Return participants to the main room. * Unmute for participation as necessary. * Pass the lead back to the Trainer. |
| slide icon  Slide 38 |  |  |
| speaker icon | Short-term:   * Restaurant purchases metal stem thermometers. * Staff are educated on the importance of cooking all chicken components to 165°F and the use of a metal stem thermometer to measure internal temperatures. * Validate chicken liver preparation plan to ensure cook temperature (165°F) is achieved.   Long-term:  After the original environmental assessment, a second inspector went out to do a compliance inspection on June 29th to review the plan that was put in place for cooking the chicken livers. The restaurant decided to stop serving chicken liver and the chef was observed using a metal thermometer to measure the temperature of the other chicken skewers.   * Implement mandatory training on food safety to include hazard analysis (cooking temperatures to kill pathogens) and plan validation (how and why to use thermometer; actions to take if temperature not achieved). * Instill a strong food safety culture. Management influences food safety attitudes, perceptions, and opinions. Ensure management provides oversight and reinforces food safety practices with training (focus on the public health reasoning) and reminders. |  |
| slide icon  Slide 39 |  |  |
| speaker icon | Community Level:   * Findings from outbreaks can reduce future foodborne illness outbreaks by providing corrective actions to outbreak establishments * Lessons learned from outbreaks can help create resources for establishments. We’ll show a great example on the next slide. * Your investigations can help influence policy. For example, New York City used findings from their environmental assessments to support a policy for mandatory paid sick leave in all establishments within their jurisdiction.   National Level:   * Data from environmental assessments were used to inform CIFOR’s outbreak response guidelines and the revision of Epi-Ready, a foodborne illness response training. * These data can also provide evidence for policies, such as support for new food code provisions. |  |
| **conversation bubbles icon** | **DEBRIEFING**  Before showing the Exercise 3 Answer Key:   * Invite groups to briefly share their results with the entire class. * Facilitate a brief discussion after all groups have shared. * Be prepared to provide clarify if necessary. |  |
| slide icon  Slide 40 |  |  |
| speaker icon | Here are two CDC infographics that were made as a result of food safety research using outbreak data.  On the left, CDC and USDA created an infographic to educate food workers on cooking chicken livers to the proper temperatures. These food safety resources may be shared at national conferences, in publications, and as an infographic on public-facing websites.  On the right is another infographic encouraging kitchen managers to be certified. These infographics can be distributed to local establishments for information and recommendations in layman terms. | Drop the website link into the Chat.  [**https://www.cdc.gov/restaurant-food-safety/site.html**](https://www.cdc.gov/restaurant-food-safety/site.html) |

### Take Home Points

|  |  |  |
| --- | --- | --- |
| slide icon  Slide 41 |  |  |
| speaker icon | First, environmental antecedents are key to identifying root causes. Understanding root causes can help inform the outbreak establishment on corrective actions to avoid a similar outbreak again. |  |
| slide icon  Slide 42 |  |  |
| speaker icon | Second, there are many resources available to help identify contributing factors and environmental antecedents and assist with trainings. CDC recently released two resources that are available on their website:   1. A contributing factor video on the importance of identifying practices and factors that contribute to an outbreak. This 9-minute training video explains contributing factors and how they are identified in an outbreak. 2. Environmental antecedent resources to assist in identifying the antecedents of an outbreak. As we mentioned earlier, these will come in three sizes, depending your need. The small one is a quick one-pager that you see on the right side of the screen. The medium size is what you used for the exercise today – this serves as a field guide. The large document is 13 pages and goes into detail about each of the antecedents. |  |
| document icon | **Resources:**  [Inspector to investigator video:](https://www.cdc.gov/nceh/ehs/nears/docs/field-guide-to-identifying-root-causes-508.pdf) [From Inspector to Investigator: https://www.youtube.com/watch?v=pWEywTiX3Sw](https://www.youtube.com/watch?v=pWEywTiX3Sw)  [Antecedent resource on right: https://www.cdc.gov/nceh/ehs/nears/docs/field-guide-to-identifying-root-causes-508.pdf](https://www.cdc.gov/nceh/ehs/nears/docs/field-guide-to-identifying-root-causes-508.pdf)  Root causes homepage: <https://www.cdc.gov/nceh/ehs/nears/root-causes-of-outbreaks.html> | Drop links into the Chat. |
| slide icon  Slide 43 |  |  |
| speaker icon | Lastly, report your outbreak data to the National Environmental Assessment Reporting System, also known as NEARS, to contribute to the advancement of outbreak science. NEARS captures environmental assessment data from foodborne illness outbreak investigations.  For more information on the program, please reach out to nears@cdc.gov. Any of the presenters of facilitators today can also answer questions about the program.  Resources:  NEARS webpage: <https://www.cdc.gov/restaurant-food-safety/php/investigations/nears.html> |  |
| document icon | **Resources:**  NEARS webpage: <https://www.cdc.gov/restaurant-food-safety/php/investigations/nears.html> | Drop link into the Chat. |
| slide icon  Slide 44 |  | Ensure the QR codes are visible to participants. |

1. Terminology

The following is a list of terms or acronyms with their respective definitions.

|  |  |
| --- | --- |
| Term | Definition |
| IAFP | International Association for Food Protection |
| CDC | Centers for Disease Control and Prevention |
| CIFOR | Council to Improve Foodborne Outbreak Response |
| EHS-Net | Environmental Health Specialists Network |
| NEARS | National Environmental Assessment Reporting System. An online tool from the CDC used by jurisdictions across the United States to track environmental assessments that are conducted as a result of foodborne illness investigations. |
| STEC | Shiga toxin-producing *Escherichia* coli. The term used to refer to a group of *E. coli* bacteria that produce powerful toxins, which can cause severe illness. |

1. Resources

The following is a list of resources used throughout this training.

|  |  |  |
| --- | --- | --- |
| Resource | Description/Link | |
| IAFP and CIFOR | | |
| IAFP Keys | <https://www.foodprotection.org/upl/downloads/publications/other/free-procedures-keys.pdf> | |
| CIFOR Guidelines for Foodborne Disease Outbreak Response | <https://cifor.us/downloads/clearinghouse/CIFOR-Guidelines-Complete-third-Ed.-FINAL.pdf> | |
| CIFOR Outbreaks of Undetermined Etiology Agent List | <http://cifor.us/uploads/resources/CIFOR-OUE-Agent-List_FINAL.pdf> | |
| **Contributing Factors and Environmental Antecedents** | | |
| Contributing Factor Definitions | [NEARS Contributing Factor Definitions | EHS | CDC](https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.cdc.gov%2Fnceh%2Fehs%2Fnears%2Fcf-definitions.htm&data=05%7C01%7Cnicole.hedeen%40state.mn.us%7Ce06e2568272d45b1eef908daa2202dba%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C638000556492839284%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=MBuPOIpF1pXiI3NvY3L%2F8lvA94dyPpOfpzUgRRhBIZs%3D&reserved=0) | |
| Environmental Antecedent Webpage with Resources QR Code |  | |
| Environmental Antecedent Field Guide | <https://www.cdc.gov/nceh/ehs/nears/docs/field-guide-to-identifying-root-causes-508.pdf> | |
| **Additional Resources** | | |
| NEARS Web Page | | [National Environmental Assessment Reporting System (NEARS) Home | EHS | CDC](https://www.cdc.gov/nceh/ehs/nears/index.htm) |
| NEARS Web Page QR Code | |  |
| Contributing Factor Video QR Code | |  |
| Contributing Factor Video | | <https://www.youtube.com/watch?v=pWEywTiX3Sw> |

**Resources (Cont’d).**

|  |  |
| --- | --- |
| Water Quality and Health Council | <https://waterandhealth.org/resources/posters/#food-safety> |
| Workbook 1 |  |

1. Level 2 Evaluation Questions

On a scale of 1 to 5, how would you rate your confidence level for each of the following statements? (*1 – Very poor to 5 – Excellent*)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Before Training:  *When faced with an outbreak, I felt confident in:* | | | | |  | After Training  *When faced with an outbreak, I will feel confident in:* | | | | |
| 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
|  |  |  |  |  | 1. Identifying resources to aid in an outbreak investigation. |  |  |  |  |  |
|  |  |  |  |  | 1. Using evidence from an environmental assessment to identify contributing factor(s). |  |  |  |  |  |
|  |  |  |  |  | 1. Asking the “5 whys” to understand why contributing factors occurred. |  |  |  |  |  |
|  |  |  |  |  | 1. Identifying appropriate environmental antecedents. |  |  |  |  |  |
|  |  |  |  |  | 1. Describing best control measures to prevent future outbreaks. |  |  |  |  |  |

1. Questions to Facilitate Engagement
2. Under what circumstances would it be appropriate to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?
3. If there were conflicting information, how would you resolve these differences?
4. What does IAFP say about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?
5. If you thought the information was incorrect, how would you address it?
6. What factors add to the complexity of an outbreak?
7. Do you see a pattern?
8. What evidence did you find to support your conclusion(s)?
9. What did you learn during this scenario that you can apply to your next investigation?
10. (SAMPLE) Worksheet for Sandbox Time
11. Scenario 1: Name

*Description of scenario 1.* Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

* 1. Question?
  2. Question?
  3. Question?
  4. Question?
  5. Question?
  6. Question?

1. Scenario 2: Name

*Description of scenario 2.* Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

* 1. Question?
     1. If no, why?
     2. If yes, why?
  2. Question?
  3. Question?
  4. Question?