Document F9

Focus Area 9 Worksheet: Laboratory Investigation

CIFOR Council to Improve Foodborne Outbreak Response

Detect • Investigate • Control • Prevent

Focus Area 9: Laboratory Investigation

To help you understand what is included in this Focus Area, review the following goals and keys to success.

GOALS FOR THE LABORATORY INVESTIGATION:

Agency/jurisdiction staff test patient specimens and suspect vehicles to identify the etiologic agent, mode of transmission, and vehicle in an outbreak and explore the ability of the agent to survive and grow in the implicated vehicle and how the vehicle might have become contaminated.

KEYS TO SUCCESS FOR THE LABORATORY INVESTIGATION:

"Keys to success" are activities, relationships, and resources that are believed to be critical to achieving success in a Focus Area. Determining whether an agency/jurisdiction has a particular key to success in place is somewhat subjective. Metrics, such as measures of time (e.g., rapidly, timely, and quickly), have not been defined. Your Workgroup should provide its own definitions for these terms, as is appropriate for your agency/jurisdiction, and use its best judgment in deciding whether a particular key to success is fully or partially in place.

Staff skills and expertise

- o Staff have expertise in appropriate laboratory testing methodologies and access to necessary equipment and reagents to perform testing.

Specimen collection and testing

- o Epidemiology and environmental health staff collect appropriate clinical and environmental specimens and store and transport them properly.
- o Staff link patient and specimen information.
- o Staff characterize isolates (e.g., subtyping) in a timely fashion.
- o Staff use standardized (currently approved) methods to subtype isolates.

Communication

- o Staff communicate in a timely fashion and coordinate activities with epidemiology and environmental health staff.
- o Staff report subtyping information to appropriate national databases in a timely fashion.

Making changes

- o Agency/jurisdiction conducts a debriefing among investigators following each outbreak response and refines outbreak response protocols based on lessons learned.
- o Agency/jurisdiction has performance indicators related to the laboratory investigation and routinely evaluates its performance in this Focus Area.

List the persons participating in the discussion of this Focus Area and list their affiliations

1. DESCRIBE YOUR CURRENT ACTIVITIES AND PROCEDURES IN THIS FOCUS AREA.

Considering the keys to success on the previous page, describe your agency's/jurisdiction's current activities and procedures in this Focus Area. Refer to written protocols, if available, and materials related to ongoing efforts in capacity development or quality improvement (e.g., FDA Retail and Manufactured Food Regulatory Program Standards). As you list current activities and procedures related to this Focus Area, indicate those that might need work to improve your agency's/jurisdiction's response to foodborne disease outbreaks.

Activity/Procedure	Needs Improvement? ✓
	☐
	☐
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2. PRIORITIZE CIFOR RECOMMENDATIONS TO ADDRESS NEEDED IMPROVEMENTS.

Having identified activities and procedures in need of improvement, review the CIFOR recommendations related to this Focus Area (listed below). Rate the priority for implementing each recommendation based on its likely impact on foodborne outbreak response at your agency/jurisdiction and available resources. Use a scale of 1to 5 to rate each recommendation (1 = Low priority for implementation and 5 = High priority for implementation). If a recommendation is already in place in your agency/jurisdiction, check the appropriate box. If a recommendation is not relevant to your agency/jurisdiction, select N/A. **Refer to the hyperlinked section number following each recommendation to view the recommendation as it appears in the CIFOR *Guidelines*.**

	Already in place	Priority for Implementation or Improvement (LOW – HIGH)
Staff skills and expertise		
Ensure laboratory investigators have the necessary skills to analyze and interpret clinical specimens and food and environmental samples as is appropriate for a particular outbreak and can guide other outbreak response team members regarding optimal specimen type and collection, transport, and storage conditions. (3.2.2.4)	☐	1 2 3 4 5 N/A
Provide continuing education to the laboratory investigator to maintain and improve skills in their specialty. (3.2.3)	☐	1 2 3 4 5 N/A
Train the laboratory investigator in the agency's/jurisdiction's outbreak response protocols and the laboratory investigator's team role. (3.2.3)	☐	1 2 3 4 5 N/A
Assemble a reference library with information about foodborne diseases, enteric illnesses, and laboratory testing methodologies. (3.2.3.3)	☐	1 2 3 4 5 N/A
Assemble a list of resource persons who have expertise in specific disease agents and laboratory testing methodologies. (3.2.3)	☐	1 2 3 4 5 N/A
Exercise outbreak response team members together to ensure that team members understand and can perform their roles according to agency-specific protocols and legal authorities and understand the roles and responsibilities of other team members. (3.2.3.4)	☐	1 2 3 4 5 N/A
Ensure that all outbreak response team members regularly participate in outbreak investigation and control efforts, even if it means working with another jurisdiction because the team's home jurisdiction does not have many outbreaks. (3.2.3.4)	☐	1 2 3 4 5 N/A

Additional ideas:

Specimen collection and testing		
Ensure that epidemiologic and environmental health investigators know how to collect appropriate clinical and environmental specimens and store and transport them properly.	☐	1 2 3 4 5 N/A

Specimen collection and testing (cont'd)	Already in place	Priority for Implementation or Improvement (LOW – HIGH)
Contact clinical laboratories that might have performed primary cultures on cases and obtain patient specimens. (Table 5.1)	☐	1 2 3 4 5 N/A
If an outbreak is related to an event or establishment, establish the etiology through testing of clinical specimens (or food item, if implicated by epidemiology or environmental investigations) to better understand the outbreak and establish links to other outbreaks or cases. (Table 5.1)	☐	1 2 3 4 5 N/A
Store food samples, pending results of epidemiologic and environmental investigations. Test when food has been implicated by these investigations. (Table 5.2)	☐	1 2 3 4 5 N/A
Refrigerate perishable food samples but keep foods that are frozen when collected frozen until examined. (4.3.9.4)	☐	1 2 3 4 5 N/A
In general, if perishable food samples cannot be analyzed within 48 hours after receipt, freeze them (–40 to –80°C). Note: The allowable length of refrigeration and desirability of freezing is pathogen and food dependent. (4.3.9.4)	☐	1 2 3 4 5 N/A
Test foods (rather than clinical specimens) for outbreaks thought to involve preformed toxins, because detection of toxin or toxin-producing organisms in clinical specimens can be problematic. (4.3.9.4)	☐	1 2 3 4 5 N/A
Use official reference testing methods for regulated food products. (4.3.9.4)	☐	1 2 3 4 5 N/A
Undertake subtyping as specimens are submitted to reduce turnaround time. (4.2.10.2)	☐	1 2 3 4 5 N/A
Undertake PFGE and serotyping concurrently to reduce turnaround time. (4.2.10.2)	☐	1 2 3 4 5 N/A
Rapidly post subtyping results to PulseNet. (4.2.10.5)	☐	1 2 3 4 5 N/A
Evaluate results of all outbreak-associated cultures to highlight possible relations among isolates from clinical, food, and environmental samples. (Table 5.1)	☐	1 2 3 4 5 N/A
Assess status of completed and pending cultures to identify gaps that suggest a potential for ongoing transmission. (Table 5.1)	☐	1 2 3 4 5 N/A
Conduct applied food-safety research to determine ability of agent to survive or multiply in implicated vehicle and how vehicle might have become contaminated with the agent. (Table 5.1)	☐	1 2 3 4 5 N/A

Additional ideas:

	Already in place	Priority for Implementation or Improvement (LOW – HIGH)
Communication		
Ensure that outbreak response team members know each other before an outbreak occurs. (3.6.2.2)	☐	1 2 3 4 5 N/A
Establish and use routine procedures for communicating with outbreak response team members and their organizational units before an outbreak occurs. (3.6.2.2)	☐	1 2 3 4 5 N/A
Maintain close communication and coordination with other members of the outbreak response team during the investigation. (5.1.2.3) (5.2.5)	☐	1 2 3 4 5 N/A
Communicate actions taken and new outbreak information to all persons involved in the investigation. (6.4.1) (5.2.5)	☐	1 2 3 4 5 N/A
Participate in daily meetings with the outbreak response team to update the entire team. Make sure suspicious new exposures are adequately considered by all team members. (5.2.5)	☐	1 2 3 4 5 N/A

Additional ideas:

Making changes		
Participate in a debriefing following each outbreak investigation with all members of the outbreak response team to identify lessons learned and compare notes on ultimate findings. Identify factors that compromised the investigation and clarify changes to procedures, resources, training, and agency structure to optimize future investigations. (6.6) (3.2.3) (5.2.8)	☐	1 2 3 4 5 N/A
Summarize investigation findings, conclusions, and recommendations in a written report, consistent with the size and complexity of the investigation, including lessons learned and action items for follow-up and quality improvement. (3.7.2) (5.2.9) (6.7)	☐	1 2 3 4 5 N/A

Additional ideas:

3. MAKE PLANS TO IMPLEMENT SELECTED CIFOR RECOMMENDATIONS.

For each CIFOR recommendation selected in the previous step (or idea formulated by the Workgroup), identify who might take the lead in implementing the recommendation and the timeframe for implementation (e.g., a specific completion date or whether the change is likely to require short-, mid- or long-term efforts). If certain actions must precede others, make a note of this and adjust the timeframe. In addition, consider factors that might positively or negatively influence implementation of the recommendation and ways to incorporate the recommendation into your agency's/jurisdiction's standard operating procedures.

CIFOR recommendations or other ideas from previous step	Lead person	Timeframe for implementation	Notes (e.g., necessary antecedents, factors that might influence implementation, ways to incorporate the recommendation into standard operating procedures)

Date worksheet completed _____