

► GUEST EDITORIAL

Beyond Inspections: Using Foodborne Outbreak Data to Drive Prevention

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A recent article in *Morbidity and Mortality Weekly Report* provides crucial insight into the contributing factors for foodborne disease outbreaks in the U.S. (Holst et al., 2025). The article includes insightful comparisons between foodborne outbreaks before the COVID-19 pandemic and foodborne outbreaks during the pandemic. This article should not be seen as just an interesting read to file away—it should be seen as a challenge to our food safety systems.

Some people might view foodborne outbreak investigations as a need to conduct inspections and identify regulatory violations for enforcement actions. While enforcement actions could be called for in some cases, we should see these investigations as an opportunity to identify actions that can prevent future outbreaks, and not just in one location. Further, by compiling the findings of many investigations, we can identify patterns that can be addressed more broadly.

Identifying and Reporting Contributing Factors

From 2014 to 2022, 6,618 foodborne outbreaks from the National Outbreak Reporting System (NORS) were analyzed (Centers for Disease Control and Prevention [CDC], 2024a; Holst et al., 2025). More than 57% of these outbreaks reported no contributing factors and some reports included factors that are not plausible for the agent, which suggests the need for training of the professionals who conduct environmental assessments. The Centers for Disease Control and Prevention (CDC), along with the Tennessee Center of Excellence, created three learning labs to equip environmental health specialists and public health staff with the skills needed for identifying contributing factors and root causes of foodborne illness out-

breaks (Integrated Food Safety Centers of Excellence, 2025; Figure 1). These learning labs, based on real outbreaks, are interactive and provide helpful outbreak investigation resources. The materials, which include facilitator guides, are available online for in-person and online delivery methods.

Using Outbreak Data to Determine Metrics

These foodborne outbreak investigations should not only identify contributing factors but also the root causes of these factors. Knowledge of the contributing factors and their root causes points to food safety prevention priorities for industry and government. Food regulatory agencies and industry should develop metrics that can demonstrate that the frequency of contributing factors and root causes identified during routine inspections are declining. This measure is the true indicator of the success of a food safety program, not the number of inspections conducted. Since root causes are not reported in the article, this editorial can only provide examples that relate to the reported contributing factors.

For bacterial foodborne outbreaks, the contributing factor of allowing foods to remain out of temperature control for a prolonged period during preparation had a reported frequency of 28–30%. A goal could be set to reduce the frequency of this factor to 20% within 3 years. With that goal set, we can then compare the frequency of this factor with the frequency of inspectional violations being cited that relate to the factor. The baseline is the current frequency of the violations, and the metric should show the reduction each year from whatever the initial frequency was.

For viral outbreaks, the three most frequently reported contributing factors were contamination from an infectious food worker through:

1. bare-hand contact with food,
2. unknown hand contact; and
3. glove-hand contact with food.

The reported frequency for the contributing factors ranged from 8.9% to 12.6%. A goal could be to reduce the frequency of occurrence to 5%. The inspectional metrics for all three factors are to reduce the frequency of ill workers preparing food and to reduce worker contamination of food, gloves, and food contact surfaces. Inspectional findings should demonstrate the reduced frequency of violations related to ill workers and hand contact-related violations. Again, it is important to emphasize that the baseline is the current frequency of the violations, and the metric should show the reduction each year from whatever the initial frequency was.

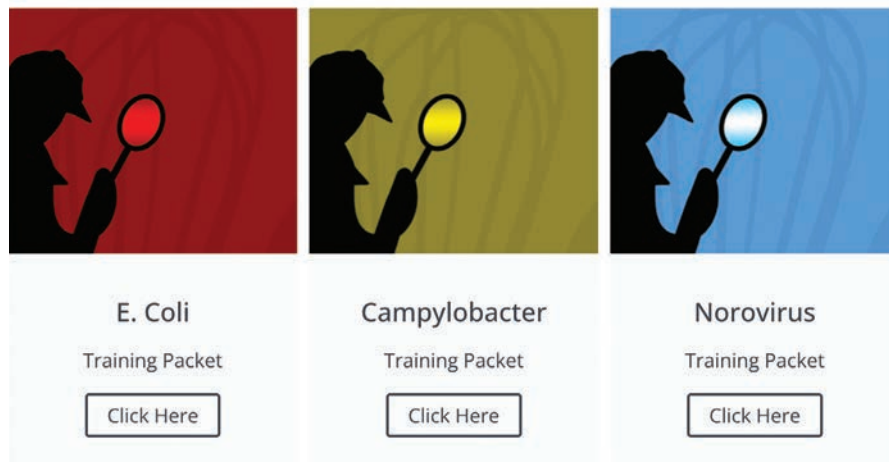
The Environmental Health Specialists Network (EHS-Net) from CDC (2024b) developed a plan for retail establishments to manage sick workers (Figure 2). The guide provides the tools to help retail establishments make a plan to keep sick workers home instead of coming to work while ill with a foodborne illness. The guide can be a great tool in reducing contributing factors related to ill food workers.

Contamination Before Arriving at Retail Settings

What metrics can we use to address the priority contributing factors for food contamination? Food contaminated by an animal or environmental source before arriving at the point of final preparation was the most frequently reported contributing factor. For food source issues, retail food regulatory agencies need to work with partner regulatory agencies and industry to ensure that programs are in place to reduce the number of food source-related outbreaks from approximately 42% of outbreaks to a hypothetical goal of 30% of outbreaks over

FIGURE 1

Outbreak Root Cause Learning Labs



Source: <https://foodsafetycoe.org/product/10368/>

FIGURE 2

Environmental Health Specialists Network (EHS-Net) Sick Worker Plan

How to Create or Improve Your Sick Worker Plan

An important line of defense to keep your staff and customers healthy is developing and enforcing a sick worker plan. This guide provides tools to help you plan for keeping sick workers out of the restaurant.

A sick worker plan (also called an employee health policy) explains expectations for a restaurant and responsibilities of employees and management in preventing the spread of illness from a sick worker to coworkers or restaurant patrons.

Infected food workers cause 70% of norovirus outbreaks in restaurants [2].

1. Use our checklist to identify gaps in your plan.

An effective sick worker plan will address training and symptom reporting, and it will outline responsibilities of managers and employees.

2. Use our sample language to improve or create your plan.

Sample language that aligns with *[insert language about the food code followed by your jurisdiction]* is provided below for each section of your sick worker plan. You can use this language to create or update your policies.

3. Train employees on the sick worker plan.

Print posters, a reporting log, and enough agreements for all employees. You can use or adapt the talking points in this guide when you talk to your workers about the plan.

4. Enforce your plan, even when inconvenient.

Follow your plan to reduce your restaurant's risk of an outbreak. Having a plan in place for when an employee calls out sick can help you control a stressful situation and prevent the spread of illness to workers and customers.

Source: <https://www.afdo.org/wp-content/uploads/2023/10/Sick-Worker-Toolkit.pdf>

a stated period (e.g., 3 to 5 years). The reported frequency of food source contributing factors was even higher than reported during prepandemic years at 51%. This finding points to the high priority of food source contamination in bacterial outbreaks and the need for more effective programs to reduce these problems. At the inspectional level, we could set a goal of reducing food source contributing factors to 30% within 3 to 5 years, the same goal as for prepandemic outbreaks.

These types of outbreaks (e.g., a large, multistate outbreak of *E. coli* from a farm) tend to get the most media coverage; however, it is important to note that the majority of foodborne outbreaks occur at a local level at retail food establishments. Therefore, learning lessons about how and why these outbreaks occur is crucial to prevent future outbreaks. We can also learn many lessons from local outbreaks that can be applied to larger multistate outbreaks originating at manufacturing facilities.

Insights and Conclusions

Food safety programs that focus on reducing the frequency of foodborne disease contributing factors and root causes can be called "epidemiology-driven food safety programs." This approach demonstrates the scientific focus of the programs and helps to justify the efforts of all interested parties. Contributing factors reflect breakdowns in food safety and these findings can help set food safety priorities for both regulatory agencies and the food industry. By establishing metrics to reduce the occurrence of contributing factors, we should see a decline in violations during inspections of those contributing factors, therefore preventing outbreaks.

A key piece of using metrics is collecting quality data. The outbreak learning labs previously mentioned are a great resource for those professionals who conduct environmental assessments to understand how and why outbreaks occur. The other resource we encourage using is the EHS-Net sick worker plan to address food workers who work while ill and who can potentially contaminate food. 🌸

Disclaimer: The conclusions in this guest editorial are those of the author and do not necessarily represent the view of any federal agency or the National Environmental Health Association.

About the Author: Jack Guzewich retired from the Center for Food Safety and Applied Nutrition (CFSAN) within the Food and Drug Administration (FDA) in August 2011. He was a senior advisor for environmental health in the Office of Food Defense, Communication, and Emergency Response. He worked on several special projects, includ-

ing enhancing relations with federal, state, and local government partners; CFSAN's produce safety initiative; the Council to Improve Foodborne Outbreak Response (CIFOR); and the implementation of environmental assessments at FDA. Before working at CFSAN, Guzewich previously worked for the New York State Department of

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