



## EHS-Net: Improving Restaurant Food Safety One Study at a Time

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Did you know that half of all foodborne illness outbreaks in the United States are associated with restaurants? The Centers for Disease Control and Prevention's (CDC's) Environmental Health Specialists Network (EHS-Net) knew; so since 2002, EHS-Net has conducted 15 studies investigating food preparation practices and other factors that could contribute to restaurant-related foodborne illness outbreaks. These studies have yielded a wealth of information about restaurant food preparation practices—information that can be used to reduce the number of foodborne illness outbreaks.

EHS-Net studies primarily focus on foods associated with foodborne illness outbreaks, such as eggs, ground beef, chicken, tomatoes, and leafy greens. They also focus on specific food safety practices, such as proper hand hygiene, and food cooling practices, and ill workers not working with food. The lack of these practices has been associated with outbreaks.



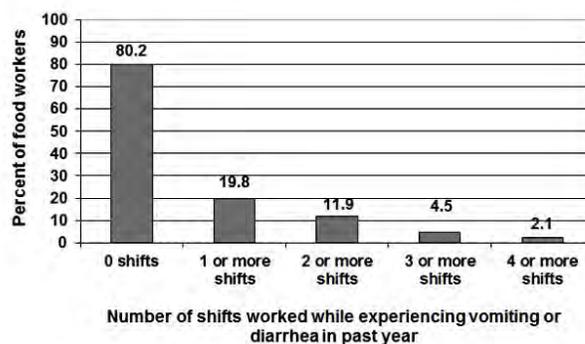
**1** EHS-Net Team Lead Carol Selman piloting one of our food safety study data collection procedures.

### EHS-Net Staff Interview and Observe Restaurant Workers

EHS-Net studies usually involve interviews with kitchen managers and/or workers about restaurant characteristics and food preparation policies and practices. For example, for our study on ill food workers—a common cause of foodborne illness outbreaks—data collectors interviewed more than 400 restaurant kitchen managers and food workers about working while ill.

Twenty percent of food workers said they had worked at least one shift in the past year while experiencing vomiting or diarrhea, symptoms of contagious foodborne illness (See Figure 1). We also found that food workers were less likely to say they had worked when they were ill if they worked in a restaurant that

- was less busy.
- had a policy for workers to tell their manager when they were sick.
- had workers who could come to work to fill in (on-call workers).
- had a more experienced manager.



**2** Figure 1. Number of shifts workers said they had worked while experiencing vomiting or diarrhea in the past year.

Based on the data from this study, EHS-Net recommended that future efforts to prevent food workers working while ill should focus on encouraging workers to tell managers when they are ill and on addressing restaurant staffing issues.

EHS-Net studies also often involve observations of food preparation. In the Tomato Preparation Practices Study, data collectors interviewed a manager, observed food workers working with tomatoes, and took temperatures of tomatoes in more than 400 restaurants. Analysis of the data from this study revealed that preparing tomatoes safely posed a challenge for many restaurants. For example, we found that about 20

percent of the time, tomatoes were washed in a way that could lead to contamination by pathogens. FDA recommends 41 degrees as the maximum cold holding temperature to reduce the spread of pathogens. We found that about half of all batches of cut tomatoes in holding areas were above 41 degrees. Additionally, many tomato batches had been above this temperature in previous preparation stages, such as storage and cutting.

One recommendation to come out of this study is that restaurant management and food safety programs focus on temperature control of tomatoes at every stage of preparation, not only in the stage for which temperature control is required. This holistic approach should make it easier to maintain temperature control during holding.

### Collaboration and Experience

EHS-Net is a collaborative agreement among CDC, US Food and Drug Administration (FDA), US Department of Agriculture, and state and local health departments. EHS-Net data collectors are environmental public health and food safety professionals in state and local environmental health agencies funded by the EHS-Net cooperative agreement. These data collectors are experienced in restaurant food safety. Several of them have been with EHS-Net since its inception in 2000.

One of those is Danny Ripley from the Nashville Public Health Department in Tennessee. When asked how EHS-Net's studies influence practices in his agency, he said: "Data from our studies influence the training we provide to restaurant staff, and they influence our inspection process. For example, our cooling study highlighted specific weaknesses with restaurants' cooling policies. So now, our food safety training addresses those weaknesses, and we look for these weaknesses during our inspections."



**3**Members of the CDC EHS-Net Restaurant Food Safety Research team (l-r): Erik Coleman, Carol Selman, Laura Brown, Kristin Delea, and Brenda Le.

### EHS-Net Future

EHS-Net is currently collecting data on deli meat preparation practices in retail delis. These data will inform efforts to reduce infections of *listeriosis*, a deadly foodborne illness infection often associated with deli meat.

EHS-Net is also working on:

- A study to learn more about restaurant knowledge, attitudes, and practices concerning food allergens.
- An intervention study designed to increase safe food preparation in restaurants.

EHS-Net staff believes that the findings from these studies will be welcomed by the restaurant industry and food safety programs alike.

Carol Selman, the EHS-Net team lead, had this to say about EHS-Net's restaurant food safety work: "The EHS-Net program has done amazing work over the past 12 years. Effective collaboration between CDC and local and state health departments has allowed us to conduct innovative, high-quality restaurant food safety research that can contribute to a reduction in foodborne illness outbreaks. We are especially excited that food safety (<http://www.cdc.gov/WinnableBattles/FoodSafety/index.html>) has been identified as one of CDC's winnable battles—we believe that EHS-Net's work can make significant contributions to this battle."

For more information on EHS-Net's food safety work, visit <http://www.cdc.gov/nceh/ehs/EHSNet/foodsafety.htm>.

This **Inside Story** by Laura Brown and Pam Wigington.