

CDC's Environmental Health Specialists Network (EHS-Net): Conducting Research to Strengthen Restaurant Food Safety Policies and Practices

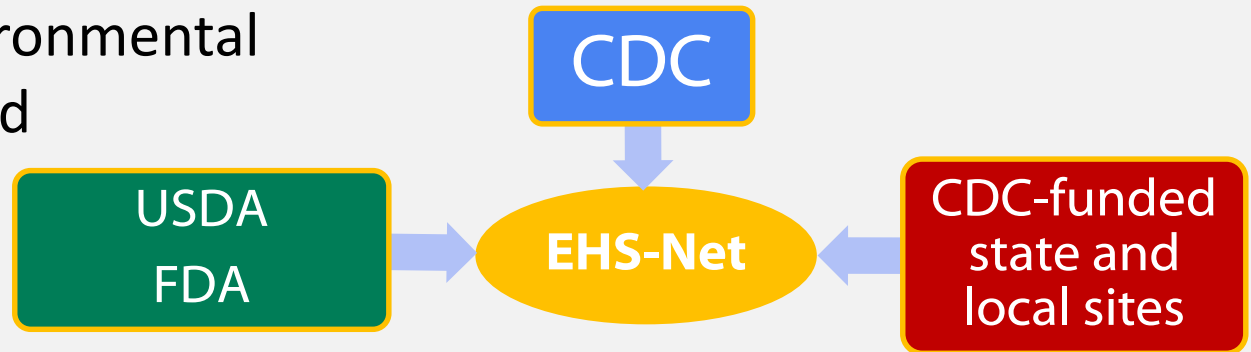
Laura Brown, Ph.D.

Environmental Health Services Branch

**Division of Emergency and Environmental Health Services
(DEEHS)**

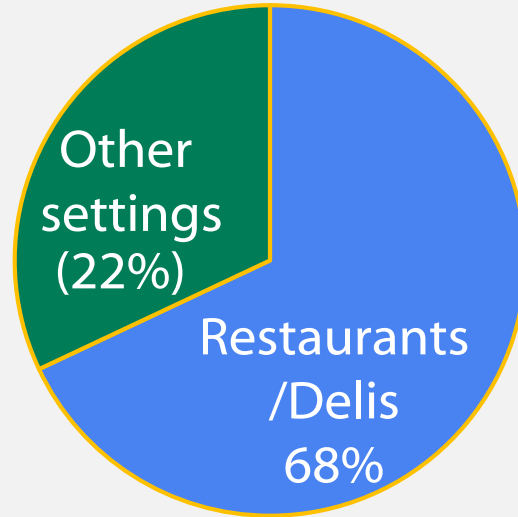
Environmental Health Specialists Network (EHS-Net)

- CDC funds 8 state and local health departments to conduct research on:
 - restaurant food safety policies and practices, and
 - the causes of restaurant-related foodborne illness outbreaks
- EHS-Net is a network of federal, state, and local environmental health specialists and epidemiologists



Why restaurants?

Most outbreaks occur in restaurants



EHS-Net restaurant food safety studies: Goals

Identify food safety policy and practice gaps

e.g.: In 12% of restaurants, hamburgers were undercooked



Identify ways to address gaps

Links between restaurant/worker traits and food safety policies and practices

e.g.: Chain restaurants and restaurants with a certified kitchen manager were less likely to serve undercooked hamburgers



Make policy and practice recommendations

e.g.: Restaurant management/food safety programs should:

- require kitchen manager certification
- develop measures to improve ground beef practices, focused on independent restaurants

EHS-Net restaurant food safety studies: Topics

- **Foods linked with foodborne illness outbreaks**
 - Beef
 - Chicken
 - Eggs
 - Leafy greens
 - Tomatoes
- **Food worker practices**
 - Food cooling
 - Hand hygiene
 - Ill workers
 - Microwave use
 - Cross contamination



EHS-Net restaurant food safety studies: Data collection

- **Involves**
 - Interviews with managers and workers
 - Observations of food prep/safety practices
 - kitchen environment
- **Is conducted by CDC-funded EHS-Net state and local health department staff**
- **Occurs in 300-400 randomly selected restaurants**

EHS-Net III Worker Study: Background

FDA Food Code

Local, state, tribal, and federal regulators use the FDA Food Code as a model for their own food safety rules to prevent outbreaks and improve food safety in restaurants.

FDA Food Code III Worker Recommendations

Food workers should tell manager if they have symptoms of foodborne illnesses

Management should exclude food workers with these symptoms

Workers should be excluded for a specific time, depending on symptoms

EHS-Net III Worker Study: Goals

**Identify gaps in
restaurant ill
worker policies
and practices**



**Identify ways to
address gaps**



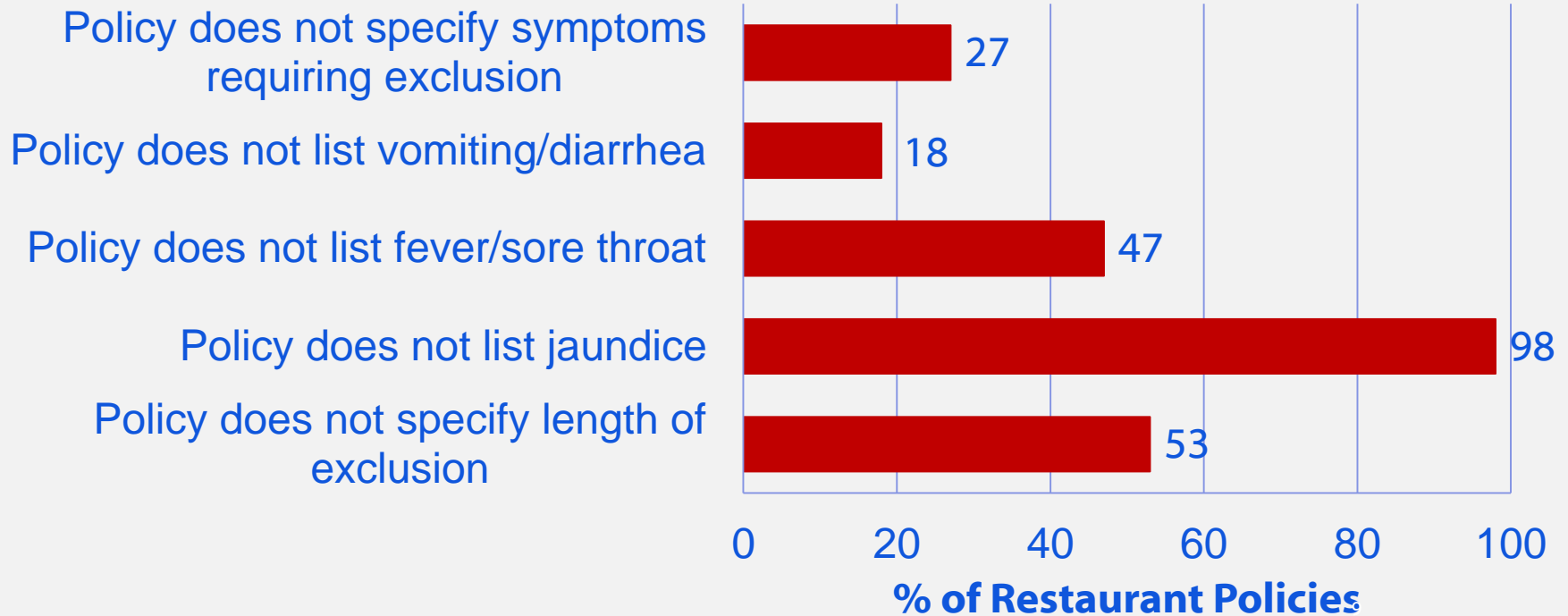
**Make policy and
practice
recommendations**



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EHS-Net III Worker Study: Findings

- 30% of restaurants do not have policies that exclude ill workers
- Of the 70% that do, many are inadequate



EHS-Net Ill Worker Study: Findings

Why workers worked sick

- No paid sick leave/sick leave policy 44%
- The restaurant was shorthanded/no one else could take their shift 32%
- Thought symptoms were not bad/contagious 31%
- Sense of duty/strong work ethic 31%

How various factors influence worker decisions to work sick

- Severity/Type of symptoms 71%
- Possibility of making others ill 71%
- Dedication to job/work ethic 65%
- Don't want to leave coworkers short-staffed 60%
- Not getting paid 49%
- Fear of losing job 26%

EHS-Net III Worker Study: Findings

- **20%** of workers said they had worked a shift in the last year with vomiting or diarrhea
- Workers more likely to say they had worked with vomiting or diarrhea if they:
 - Were ***afraid that they would lose their job*** if they didn't come to work
 - Had ***concerns about short-staffing*** if they didn't come to work
 - Worked in restaurants ***servicing more meals daily***
 - Worked in restaurants that ***did not have on-call workers***
 - Worked in restaurants with ***less experienced managers***
 - Worked in restaurants with ***no policy requiring workers to tell managers when they were ill***

EHS-Net III Worker Study: Recommendations

Most restaurants' ill worker policies are inadequate.

Many food workers work when they are ill, for personal, financial, and social reasons.

Restaurant management should create, and food safety programs should encourage

Comprehensive ill worker policies that address exclusion symptoms.

- Actions that ease the pressure for workers to work when they are ill (e.g., on-call workers).
- Education on the importance of not working while sick.

EHS-Net restaurant food safety studies: Dissemination

778

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Quantitative Data Analysis To Determine Best Food Cooling Practices in U.S. Restaurants¹

DONALD W. SCHAFFNER,^{1*} LAURA GREEN BROWN,² DANNY RIPLEY,³ DAVE REIMANN,⁴ NICOLE KOKTAVY,⁵ HENRY BLADE,⁶ and DAVID NICHOLAS⁷

¹Food Science Department, Rutgers University, 65 Dudley Road, New Brunswick, New Jersey 08901; ²National Center for Environmental Health, Centers for Disease Control and Prevention, MS F60, 4770 Buford Highway, Chamblee, Georgia 30341; ³Metro Nashville/Davidson County Public Health Department, 311 25th Avenue North, Nashville, Tennessee 37203; ⁴Minnesota Department of Health, 13 Civic Center Plaza, Suite 2003, Monticello, Minnesota 56001; ⁵Minnesota Department of Health, 623 Robert Street North, Saint Paul, Minnesota 55104; ⁶Rhode Island Department of Health, 5 Capital Hill, Cannon Building, Room 203, Providence, Rhode Island 02908; and ⁷New York State Department of Health, Bureau of Community Environmental Health and Food Protection, Corning Tower, Empire State Plaza, Albany, New York 12227, USA

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ABSTRACT

Data collected by the Centers for Disease Control and Prevention (CDC) show that improper cooling practices contributed to more than 500 foodborne illness outbreaks associated with restaurants or delis in the United States between 1998 and 2008. CDC's Environmental Health Specialists Network (EHS-Net) personnel collected data in approximately 50 randomly selected restaurants in nine EHS-Net sites in 2009 to 2010 and measured the temperatures of cooling food at the beginning and the end of the observation period. Those beginning and ending points were used to estimate cooling rates. The most common cooling method was refrigeration, used in 48% of cooling steps. Other cooling methods included ice baths (19%), room-temperature cooling (17%), ice-wand cooling (7%), and adding ice or frozen food to the cooling food as an ingredient (2%). Sixty-five percent of cooling observations had an estimated cooling rate that was compliant with the 2009 Food and Drug Administration Food Code guideline (cooling to 41°F [5°C] in 6 h). Large cuts of meat and stews had the slowest overall estimated cooling rate, approximately equal to that specified in the Food Code guideline. Pasta and noodles were the fastest cooling foods, with a cooling time of just over 2 h. Foods not being actively monitored by food workers were more than twice as likely to cool more slowly than recommended in the Food Code guideline. Food stored at a depth greater than 7.6 cm (3 in) was twice as likely to cool more slowly than specified in the Food Code guideline. Unventilated cooling foods were almost twice as likely to cool more slowly than specified in the Food Code guideline. Our data suggest that several best cooling practices can contribute to a proper cooling process. Inspectors unable to assess the full cooling process should consider assessing specific cooling practices as an alternative. Future research could validate our estimation method and study the effect of specific practices on the full cooling process.

Improper cooling of hot foods by restaurants is a significant cause of foodborne illness in the United States. Data collected by the Centers for Disease Control and Prevention (CDC) show that improper cooling practices contributed to 504 foodborne illness outbreaks associated with restaurants or delis between 1998 and 2008 (1).

Clostridium perfringens is the pathogen most frequently associated with foodborne illness outbreaks caused by improper cooling of foods. Between 1998 and 2002, 50 (almost 50%) of 102 outbreaks with known etiologies associated with improper cooling were caused by *C. perfringens* (7). *C. perfringens* spores can germinate during cooking, and the resulting cells grow quickly, especially

when foods are cooled too slowly. *Bacillus cereus* spores can also survive the cooking process and may pose a risk during improper cooling (7). The U.S. Food and Drug Administration (FDA) Food Code provides the basis for state and local codes that regulate retail food service in the United States and contains cooling guidelines for food service establishments. To combat foodborne illness outbreaks associated with improper cooling, the 2009 FDA Food Code (section 3-501.14) states that cooked foods requiring time-temperature control should be cooled "rapidly" (specifically from 135 to 70°F [57 to 21°C]) within ≈2 h, and cooled further from 70 to 41°F (21 to 5°C) within an additional ≈4 h (14). The U.S. Department of Agriculture (USDA) Food Safety Inspection Service (FSIS) has similar cooling requirements for commercially processed cooked meats. Those requirements state that the maximum internal temperature of cooked meat should be allowed to remain between 130 and 80°F (54.4 and 26.7°C) for no longer than 1.5 h and then between 80 and 40°F (26.7 and 4.4°C) for no longer than an additional 5 h (12).

* Author for correspondence: Tel: 732-983-7475; Fax: 732-952-6776; E-mail: schaffner@njsm.nj.gov.

¹ This publication is based on data collected and provided by the Centers for Disease Control and Prevention's (CDC) Environmental Health Specialists Network (EHS-Net). The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the CDC's Agency for Toxic Substances and Disease Registry.

Best Food Cooling Practices for Restaurants EHS-Net Study Findings and Recommendations

Hot food needs to be cooled quickly to stop germ growth and foodborne illness outbreaks caused by germs. From 1998 to 2008, hot food cooled too slowly led to 504 outbreaks of foodborne illness in restaurants. If we learn more about how restaurants cool food, we can improve how they do it. And we can lower the number of foodborne illness outbreaks.

The U.S. Food and Drug Administration (FDA) Food Code includes advice on how to cool food safely and quickly. This advice includes cooling food

- to 41°F in 6 hours and
- in a way that allows food to cool quickly, Food can be cooled quickly
 - in shallow pans and
 - in a way that air can flow around and in the pans (ventilated).

The Food Code also recommends that food cooling time and temperature be monitored during cooling.

What the Study Described

The purpose of this study is to examine how cooling practices like pan depth, ventilation, and time and temperature monitoring are linked to how fast food cools.

What the Study Found

Many of the foods with cooling times slower than in the Food Code were cooling only slightly slower than the guidelines. Restaurants with only slightly slower cooling foods may need only to make small changes to their cooling practices to comply with the Food Code guideline.

Estimates showed that 35% of the foods we monitored while cooling would have taken longer than 6 hours to reach 41°F (the Food Code guideline).

Following the Food Code guidelines of storing foods at shallow depths, ventilating foods, and monitoring cooling food time or temperatures help foods cool faster.



This study was conducted by the Environmental Health Specialists Network (EHS-Net). EHS-Net is a federally funded collaboration of federal, state, and local environmental health specialists and epidemiologists working to better understand the environmental causes of foodborne and waterborne illness. Visit EHS-Net at <http://www.cdc.gov/nceh/ehs/EHSNet>.

National Center for Environmental Health
Division of Emergency and Environmental Health Services



Summary

- Identify food safety policy and practice gaps and ways to address them
- Make recommendations



Strengthen policies and practices



Improved food safety; fewer outbreaks

Thank you

For more information, contact NCEH
1-800-CDC-INFO (232-4636)
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

