



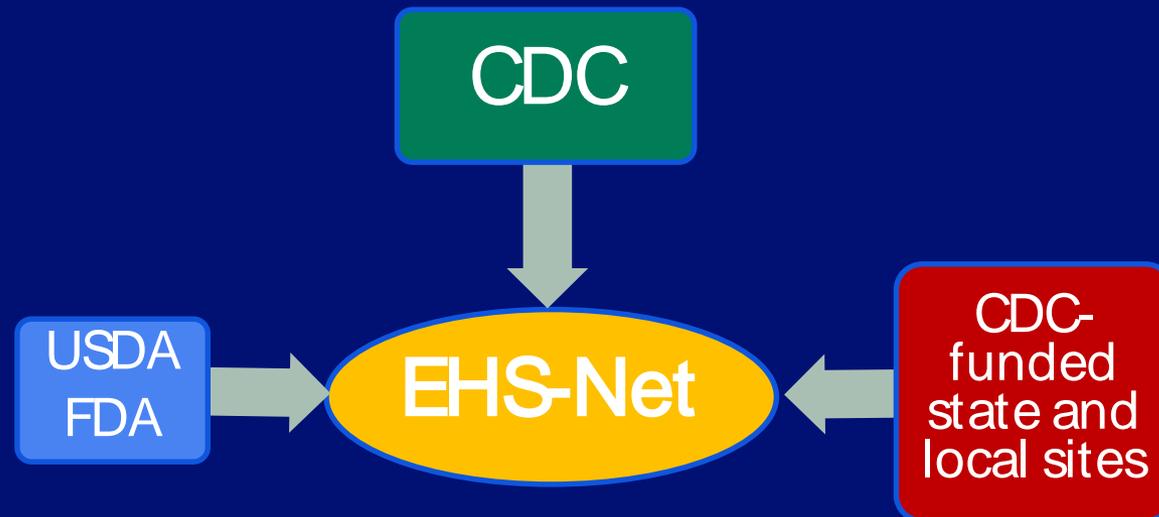
Introduction to the Centers for Disease Control and Prevention's Environmental Health Specialists Network (EHS-Net)

Vince Radke

Environmental Health Services Branch

EHS-Net

- ❑ Since 2000, CDC has funded state and local health departments to conduct research that contributes to our understanding of environmental causes of outbreaks
- ❑ Focused on retail food service
- ❑ EHS-Net is a collaborative program of federal, state, and local environmental health/food safety specialists and epidemiologists



EHS-Net: Priorities



EHS-Net: Environmental causes of foodborne illness outbreaks

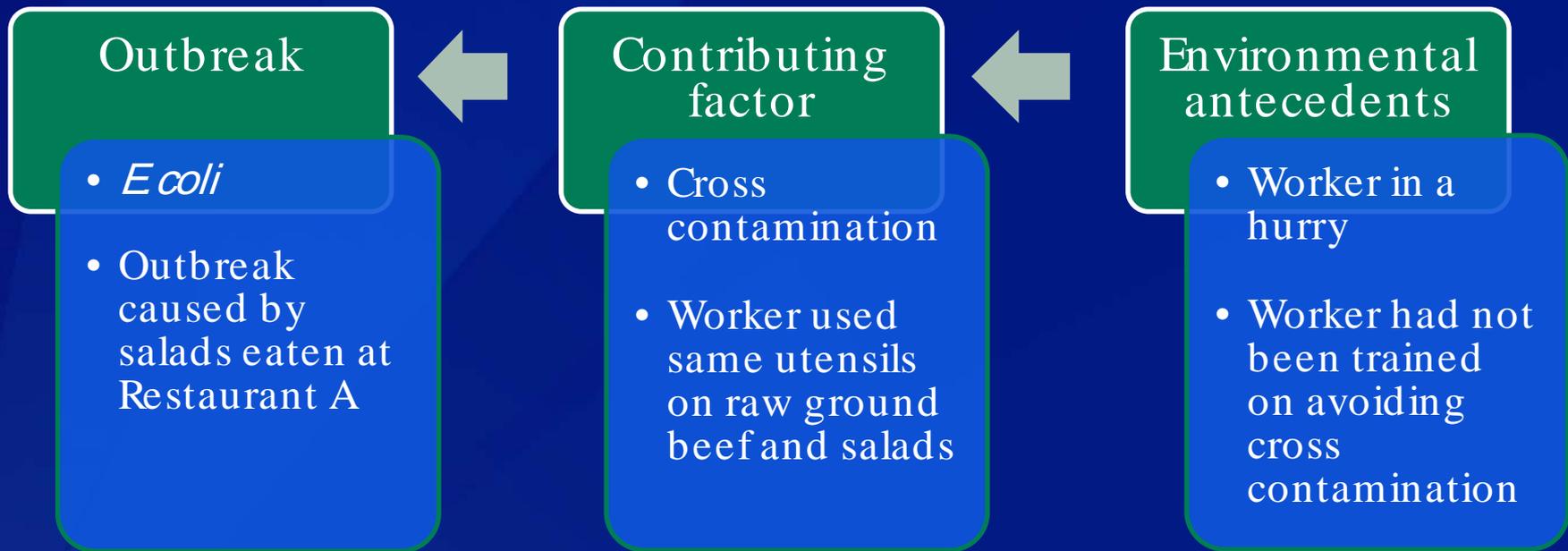
Contributing factors

- Factors that caused the outbreak
- *How* the outbreak occurred

Environmental antecedents

- Factors that led to the contributing factors
- *Why* the outbreak occurred

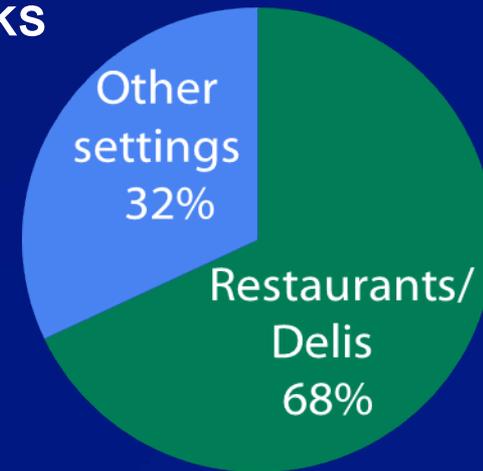
EHS-Net: Environmental causes of foodborne illness outbreaks



EHS-Net retail food safety studies

EHS-Net retail food safety studies: Why retail?

Two-thirds of foodborne illness outbreaks are linked with retail establishments



Contributing factors to outbreaks include inadequate food safety practices

Inadequate cooking

Inadequate holding time/temp

Cross contamination

Poor personal hygiene

EHS-Net retail food safety studies: Focus

Describing

- Food safety policies and practices
 - In 12% of restaurants, hamburger temperatures were too low

Finding links

- Between establishment and worker traits and food safety policies and practices
 - Restaurants with a certified kitchen manager were less likely to serve undercooked hamburgers

EHS-Net retail food safety studies: Topics

- ❑ Beef
- ❑ Chicken
- ❑ Eggs
- ❑ Food cooling
- ❑ Hand hygiene
- ❑ Ill workers
- ❑ Kitchen manager certification
- ❑ Leafy greens
- ❑ Outbreak
- ❑ Tomatoes
- ❑ Retail deli food safety practices



EHS-Net retail food safety studies: Process

Data collection

❑ Involves

- Interviews with managers and workers
- Observations of
 - food prep/safety practices
 - kitchen environment

❑ Is conducted by EHS-Net site environmental health specialists

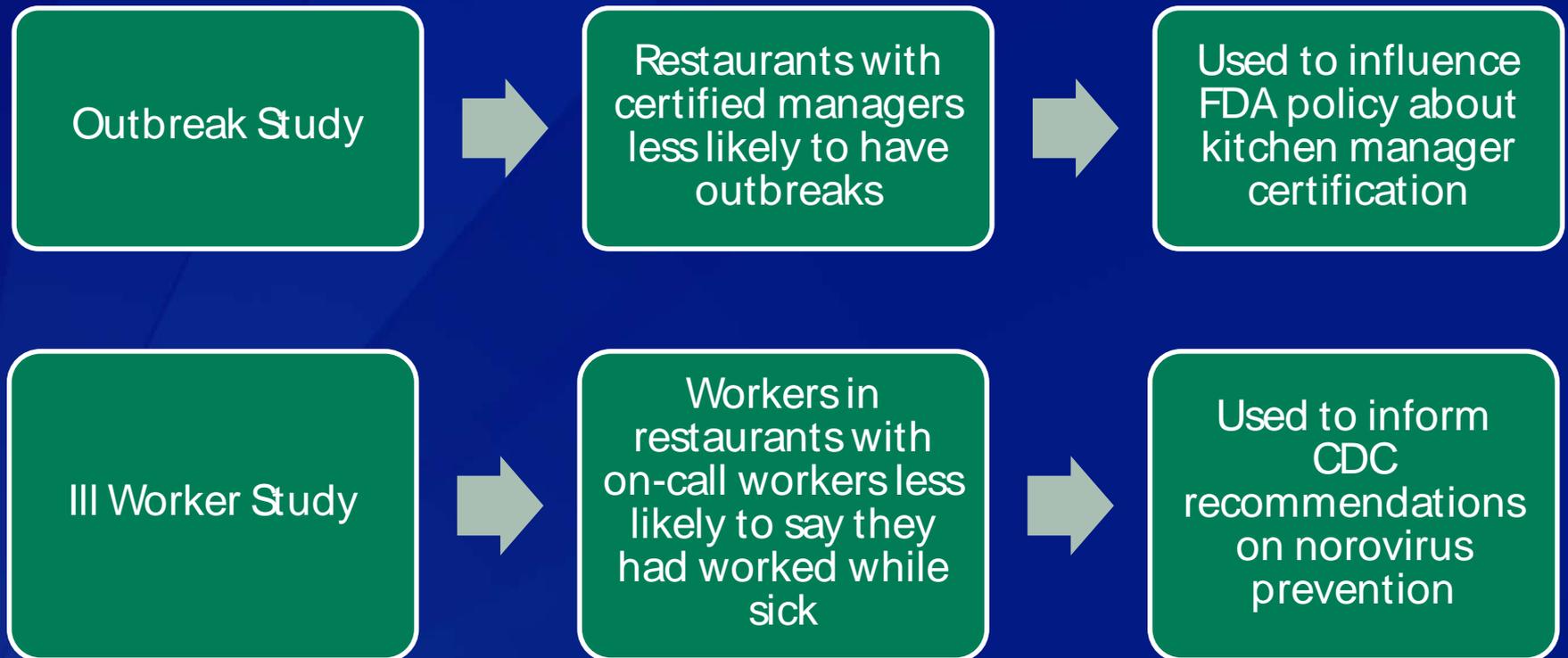
❑ Occurs in ~300 randomly selected establishments in selected jurisdictions in EHS-Net sites

EHS-Net retail food safety studies: Limitations

- ❑ Only collect data in establishments with an English-speaking manager/worker
 - Data may not represent establishments without English speakers
- ❑ Biases
 - Interview data: subject to social desirability bias
 - Observation data: subject to reactivity bias
 - These biases may lead to overestimates of safe food prep practices



EHS-Net retail food safety studies: Findings and use



EHS-Net food safety studies: Resources

EHS-Net web page: <http://www.cdc.gov/nceh/ehs/EHSNet/>

- Publications
- Study protocols
- Plain language summaries of study findings

EHS-Net food safety studies: Retail deli practices



Thank you



Vince Radke

ver2@cdc.gov

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

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.

National Center for Environmental Health

Division of Emergency and Environmental Health Services





EHS-Net's Retail Deli Practices Study Findings

Taylor Radke, MPH

Environmental Health Services Branch

National Center for Environmental Health

Division of Emergency and Environmental Health Services



Background

- ❑ *L. monocytogenes* (*Listeria*) causes the third highest number of deaths from foodborne illness¹
- ❑ Of 23 ready-to-eat foods linked to *Listeria*, deli meats pose the greatest *Listeria* risk per year and per serving²
- ❑ Cross-contamination is likely an important contributor to contamination of food with *L. monocytogenes* and other foodborne pathogens in retail delis³



Purpose/objectives

- ❑ Describe deli, manager, and worker cross-contamination prevention practices and policies
- ❑ Determine which characteristics, practices, and policies are associated with cross-contamination risks



Data collection

Conducted by environmental health specialists in 6 CDC-funded EHS-Net sites:

- California
- Minnesota
- New York State
- New York City
- Rhode Island
- Tennessee

Manager interview (N=300)

- Deli and manager characteristics
- Food safety policies and practices
- Food safety knowledge test

Food worker interview (N=296)

- Worker characteristics
- Food safety practices
- Food safety knowledge test

Observation (N=300)

- Deli's environment
- Food safety practices

Analysis

- ❑ Descriptive data on deli, manager, and worker characteristics
- ❑ Descriptive data on cross contamination prevention practices and policies
- ❑ Regressions analyses

Hand washing sinks

Hand washing sinks also used for other activities (opening chubs; rinsing raw vegetables; washing dishes, equipment)

Separation of raw and ready-to-eat food

Raw animal products and deli products stored together in coolers

Sanitizing

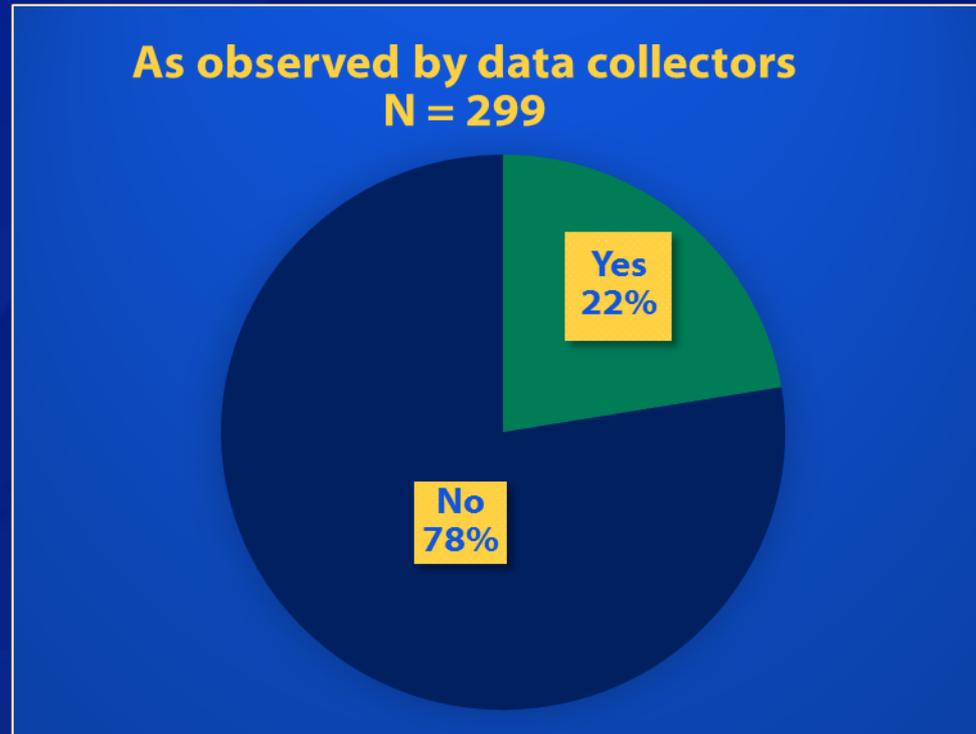
Sanitizing solution is at improper concentration

Descriptive data: Delis, managers, and food workers

Deli Characteristics	n	%	Manager Characteristics	n	%
Ownership type (N=300)			Food safety certified (N=299)		
Chain	165	55.0	Yes	204	68.2
Independent	135	45.0	No	95	31.8
# of customers served on busiest day (N=264)			Experience in the retail food industry (N=300)		
0-99	85	32.2	≤ 10 years	78	26.0
100-299	93	35.2	>10 – 20 years	94	31.3
≥ 300	86	32.6	> 20 years	128	42.7
# of work shifts per day (N=300)					
1 or 2	151	50.3	Worker Characteristics	n	%
≥ 3	149	49.7	Received food safety training (N=295)		
Average # of employees per shift (N=299)			Yes	222	75.3
1 or 2	150	50.2	No	73	24.7
≥ 3	149	49.8	Experience in the retail food industry (N=295)		
Manager food safety training required (N=297)			< 10 years	144	48.8
Yes	221	74.4	≥ 10 years	151	51.2
No	76	25.6			

Descriptive data: Hand washing sinks

*Hand washing sinks also used for other activities (opening chubs;
rinsing raw vegetables; washing dishes, equipment)*



Regression findings: Hand washing sinks

2 or fewer work shifts in the deli per day
(vs. more shifts)
(OR=7.18)

2 or fewer employees, on average, per shift
(vs. more employees)
(OR=4.03)

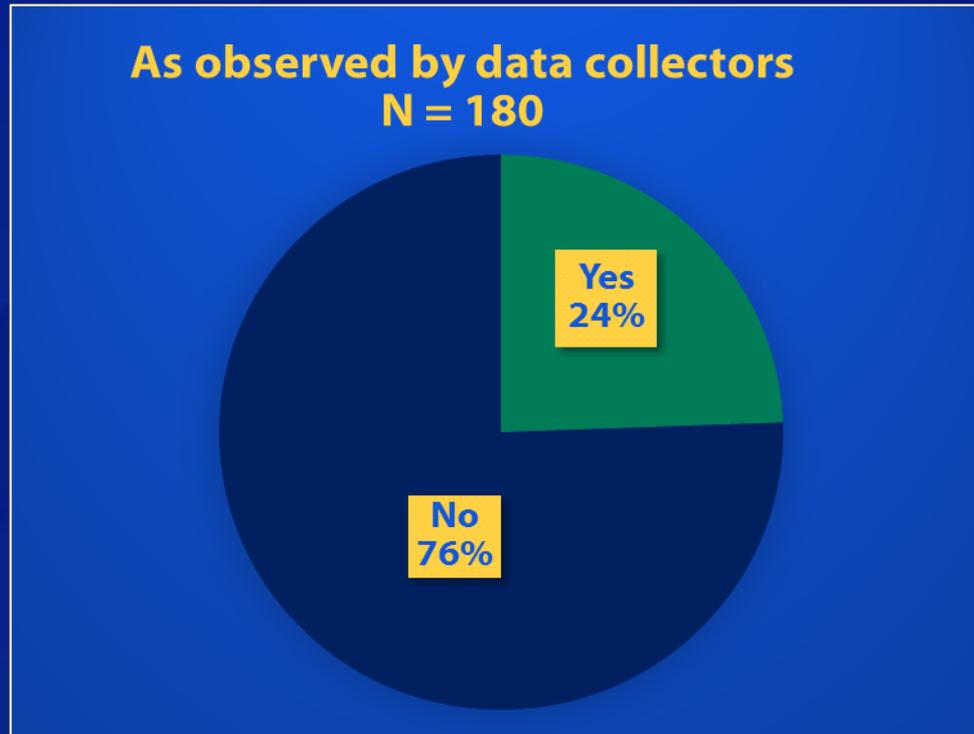
Deli manager is not food safety certified
(vs. is certified)
(OR=1.95)



Hand washing sinks
also used for other
activities

Descriptive data: Separation of raw and ready-to-eat foods

Raw animal products and deli products stored together in in the cooler



Regression findings: Separation of raw and ready-to-eat foods

Worker is not food safety trained
(vs. is trained)
(OR=2.74)

Worker has less than 10 years of retail experience
(vs. more than 10 years)
(OR=1.88)

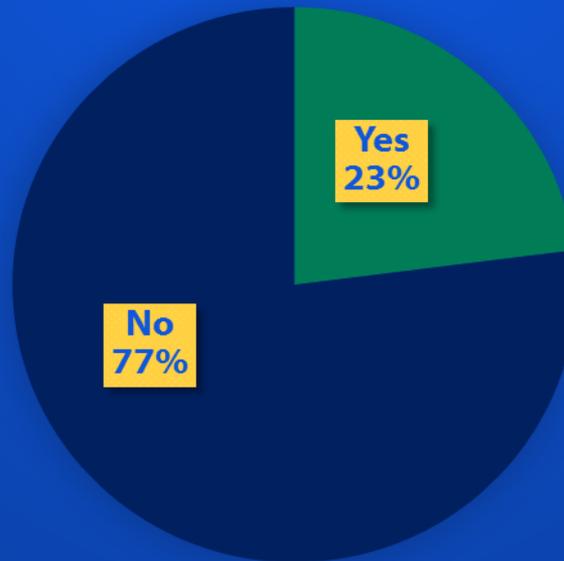


Raw animal and deli products stored together inside coolers

Descriptive data: Sanitizing

Sanitizing solution is at improper concentration

As observed by data collectors
N = 239



Regression findings: Sanitizing

Independent deli
(vs. chain)
(OR=5.01)

**Deli manager is not food
safety certified**
(vs. is certified)
(OR=2.35)

**Manager food safety training
is required by deli**
(vs. is required)
(OR=4.00)



**Sanitizing solution is
at improper
concentration**

Conclusion and recommendations

Many delis are engaging in practices that could lead to cross-contamination



- Manager and worker training and certification should be encouraged
- Interventions should focus on independent and smaller delis

References

1. Scallan E, Hoekstra R, Angulo F, Tauxe R, Widdowson MA, Roy S, Jones J, Griffin P. Foodborne illness acquired in the United States—major pathogens. *Emerg Infect Dis* 2011;17:7–15.
2. U.S. Food and Drug Administration; U.S. Department of Agriculture; and Centers for Disease Control and Prevention. 2003. Quantitative assessment of the relative risk to public health from foodborne *Listeria monocytogenes* among selected categories of ready-to-eat foods. Available at: <http://www.fda.gov/food/foodscienceresearch/risksafetyassessment/ucm183966.htm>, accessed September 25, 2015.
1. Maitland J, Boyer R, Gallagher D, et al. 2013. Tracking cross-contamination transfer dynamics at a mock retail deli market using GloGerm. *Journal of Food Protection*; 76(2): 272-282.

Thank you



Taylor Radke

tradke@cdc.gov

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

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.

National Center for Environmental Health

Division of Emergency and Environmental Health Services

