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IFPTI Fellowship Cohort VII: Research Presentation

Mike Oravetz, REHS

Cooling Protocol Compliance of Restaurants in Carson City and Douglas County NV

Mike Oravetz, REHS
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Background

- The improper cooling of foods is a foodborne illness risk factor closely associated with foodborne pathogens such as:

Clostridium perfringens	***Bacillus cereus***
• >1 million cases • >26% of all bacterial foodborne illnesses	• >60,000 cases

Case counts are likely to be underestimated

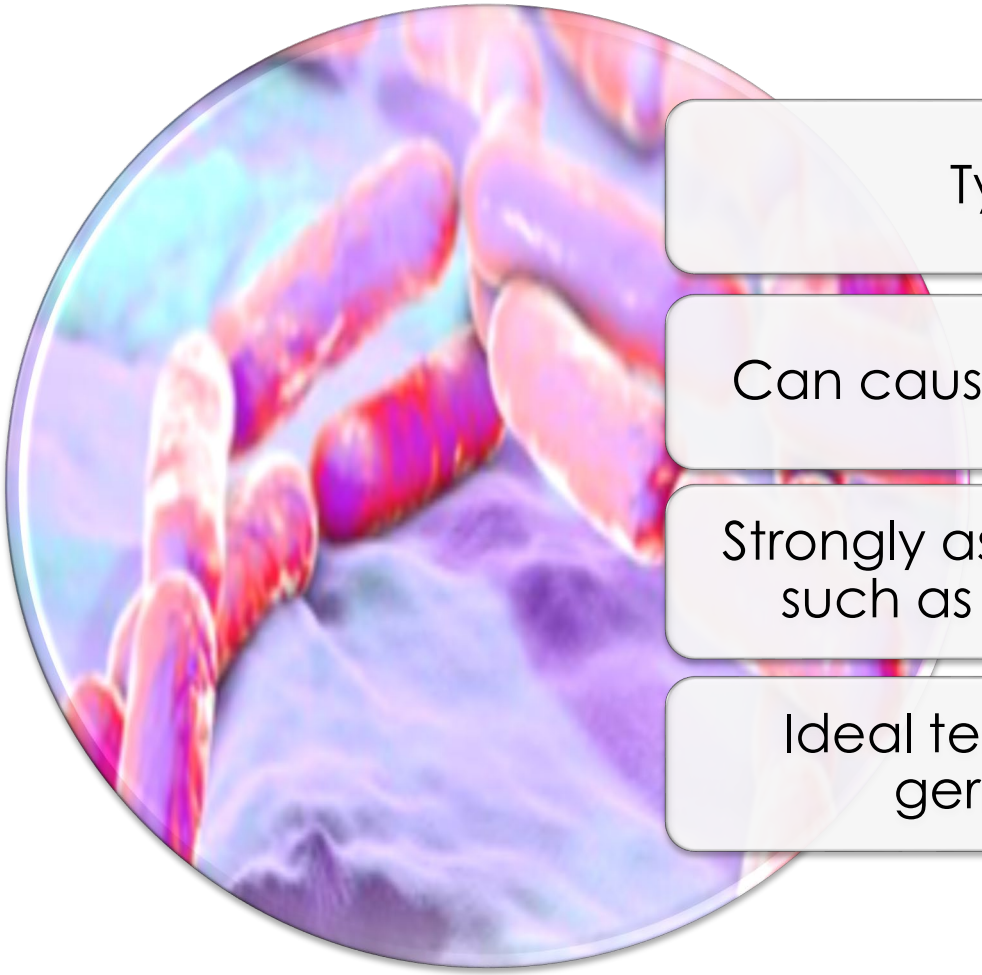
Background

Clostridium perfringens

- Found in dust, soil, and intestinal tracts of humans and animals
- Symptoms include abdominal cramps, diarrhea, and fatal necrotizing colitis
- Commonly found in poultry and beef products such as stews, gravies, beans, and meats
- Ideal temperature for vegetative cell growth - **59**°F to **131**°F

Background

Bacillus cereus



- Typically found in soil
- Can cause both emesis and diarrhea
- Strongly associated with starchy foods such as rice dishes, large batches
- Ideal temperature for endospore germination - **50**°F to **91**°F

Background

Economic Burden From Health Losses

Average total cost of *C. perfringens* infection

- $382 million per year
- $395 per case

Average total cost of *B. cereus* infection

- $11 million per year
- $166 per case

Background

Proper Cooling and Regulation

- Proper cooling protocols are not always carried out consistently by food handlers and are frequently overlooked by regulators during routine inspections.
- Improper cooling is a key contributing factor for many foodborne illness outbreaks (Bryan, 1988).
- Regulatory evaluations can be difficult to achieve due to infrequency of inspections and inspectors not being present during times when cooling activities are carried out.

Background

FDA and NV Food Code

- Potentially hazardous foods which are cooked in large batches for future consumption must undergo a two-step cooling process.
- Hot TCS foods must be cooled from 135°F to 70°F within 2 hours, and then from 70°F to 41°F within an additional 4 hours.

Problem Statement

The rate of compliance and barriers to following cooling protocols stipulated in the Nevada Food Code for full-service establishments in Douglas County and Carson City, NV are relatively unknown to food safety regulators.

Research Questions

1. Do the full-service restaurant operators in Carson City and Douglas County understand the proper steps in the cooling protocols that are stipulated in the Nevada Food Code?

2. What barriers do full-service restaurant operators in Carson City and Douglas County encounter in complying with the cooling protocols that are stipulated in the Nevada Food Code?

Study Population

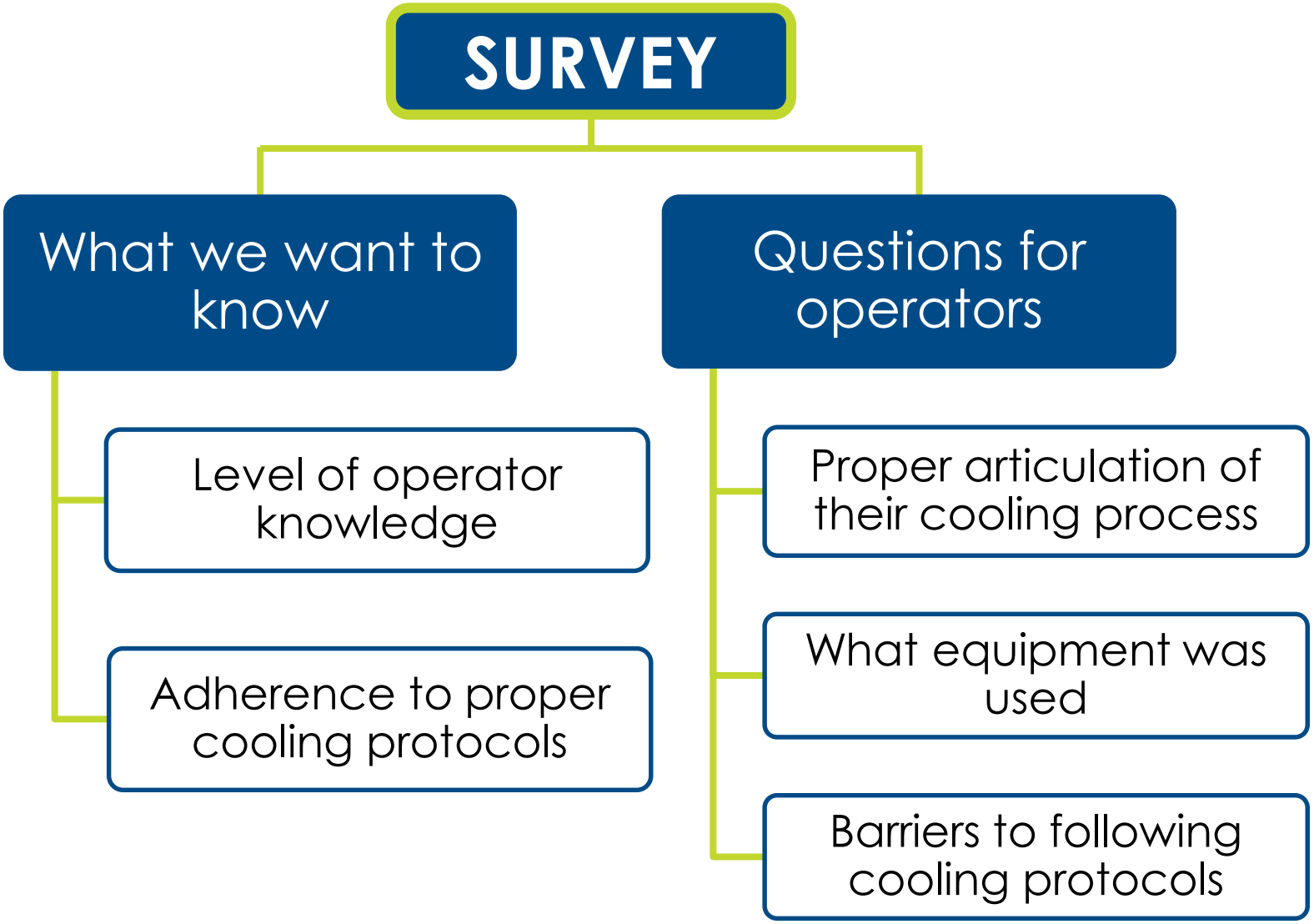
- 121 facilities total
  - 42 Carson City restaurants surveyed
  - 49 Douglas County restaurants were surveyed

Full-service restaurants that require cooling of foods		
Mexican restaurants	Casinos	Asian restaurants
School Cafeterias	Banquets	Chain restaurants
Buffets		

Methodology

- Created a survey and submitted for approval from the management staff in our agency.
  - The survey focused on the large batch cooking procedures of each establishment.

Methodology



Methodology

Standardization of the Regulators

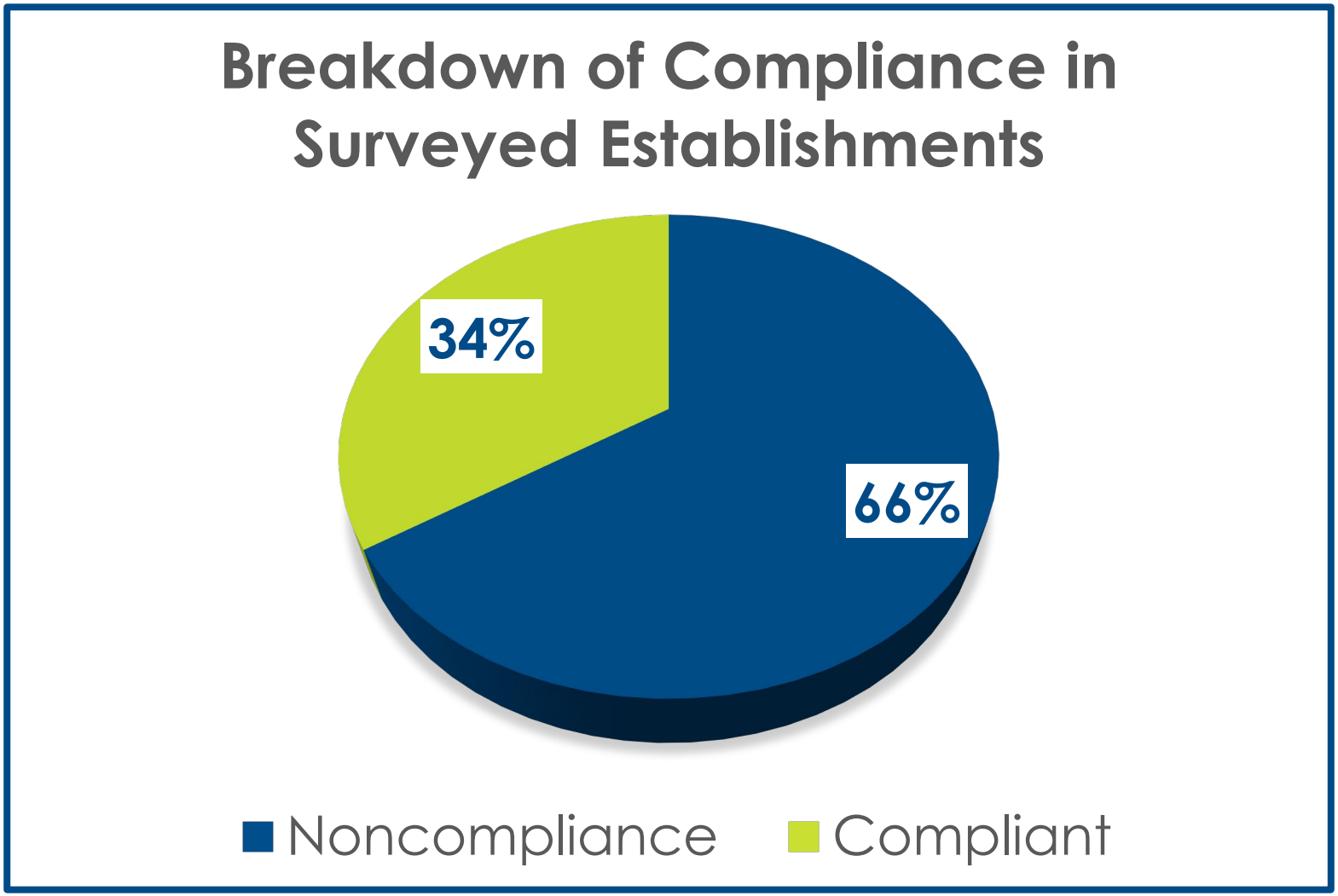
- Process included instructions on how to conduct the surveys:
  - Introduce survey to operator
  - Ask open-ended questions
  - Use reference points
- Emphasize survey not punitive, no negative impact to inspection score or records

Methodology

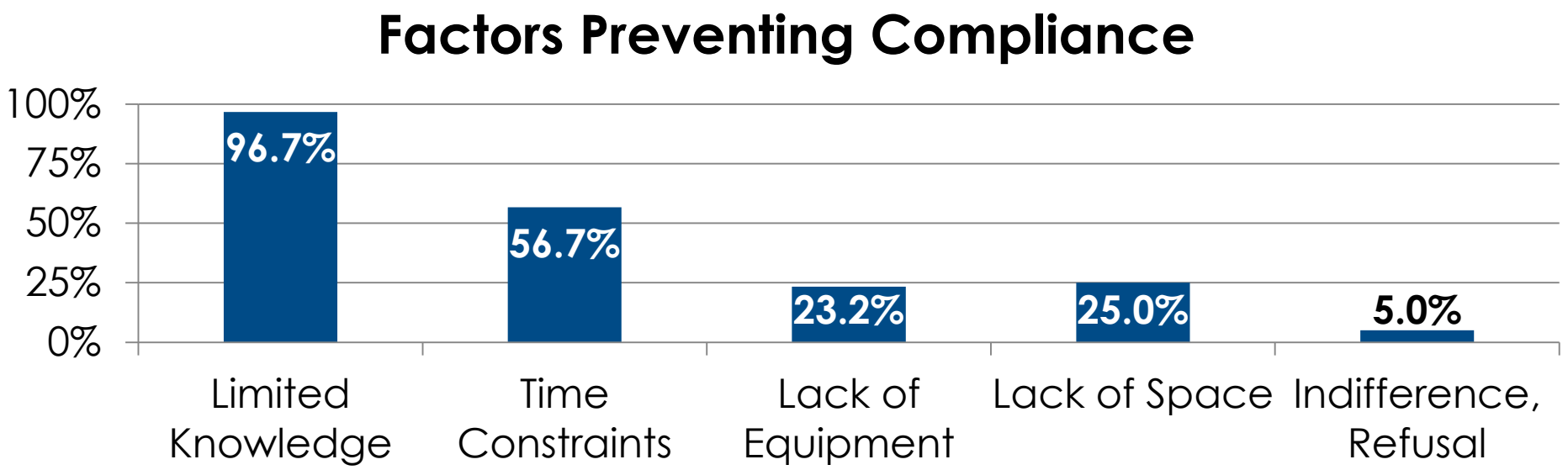
Data Collection and Analysis

- Completed surveys were entered into a spreadsheet.
- Statistics:
  - Total percentage of compliance
- Barriers to compliance
  - Frequency of responses for each category
  - Could select as many as applied

Results



Results



Results

- Many restaurants engaged in passive, prolonged cooling
  - Many operators unaware of risks
- Prioritized other duties
  - Cleaning, prepping, cooking
- Prepared an overabundance of food
  - Exceeded space, equipment available
- Understaffing of kitchens

Conclusions

- Noncompliance of cooling protocols is a serious food safety risk and over 60% of operators are noncompliant.
- Lack of knowledge is the primary cause
- Study limitation:
  - Relied primarily on second-hand recollection
  - Perfect survey responses do not necessarily prove compliance
  - Deemed insignificant for study

Recommendations

1. Comprehensive education program that focuses on the inherent risk and the proper use of equipment
2. Utilize visual aids and handouts
3. Inspections carried out at various times of the day
4. Cooling must be focused during plan reviews
5. Storage of foods
6. Modify Nevada Food Code

Acknowledgements

- International Food Protection Training Institute (IFPTI)
- Doug Saunders, Paul K. Dezendorf
  - IFPTI mentors
- Dustin Boothe
  - CCHHS Environmental Health Manager
- Bert Bartleson and everyone at the Washington State Department of Health
- To all the Cohort VII members at IFPTI, thank you for your kinship and wonderful memories.

Funding for this program was made possible, in part, by the Food and Drug Administration through grant 5U18FD005964-03; views expressed in written materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does any mention of trade names, commercial practices, or organization imply endorsement by the United States Government.

Questions?

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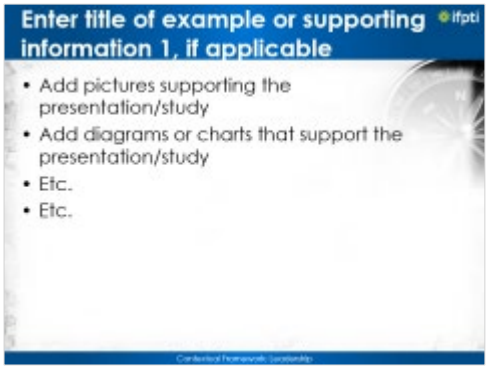

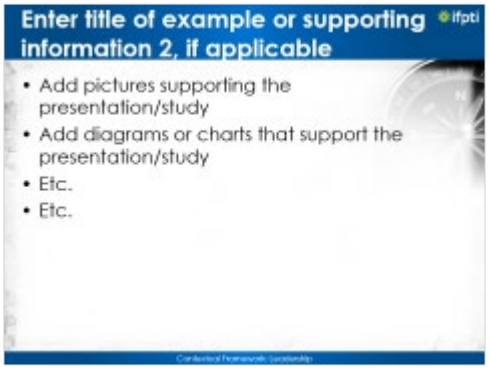

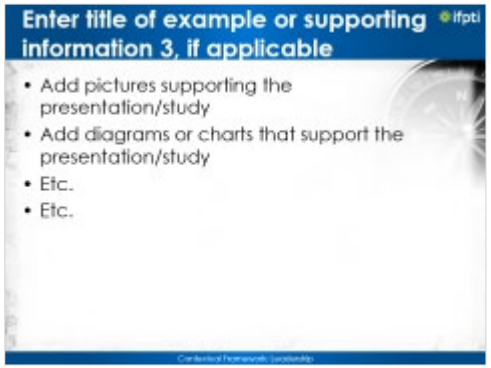

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- Passive Prolonged Cooling

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