Food Safety Interventions of Food Service Establishments: Current Evidence

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Outline

• Introduction: Purpose of this project
• Methods: How food safety is evaluated in the literature
• Results of the four evidence reviews
• Discussion: Trends in the field of research
• Limitations & Evidence Gaps
Purpose

• Examine the evidence on the effectiveness of existing interventions for reducing food-borne illness among food service establishments

• Identify evidence gaps of existing food safety interventions
Methods

• Consultation with reference committee
  – Identifying interventions of interest
• Literature search
  – Peer reviewed & grey literature
• Evaluation of intervention effectiveness
  – Based on the NCCHPP model
• Identification of indicators
  – Food safety measures
<table>
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<tr>
<th>Type of Intervention</th>
<th>Examples</th>
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<tr>
<td>Inspection protocol</td>
<td>Frequency of inspection visits, inspection methodologies</td>
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<tr>
<td>Hazard Analysis of Critical Control Points (HACCP)</td>
<td>Mandatory creation and tracking of food safety/HACCP plan</td>
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<td>Risk-based inspection</td>
<td>Inspection frequency based on risk level of premise</td>
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<td>Field reporting technology</td>
<td>Electronic hand held device for inspection reporting</td>
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<td>Food handler training</td>
<td>Mandatory food handler certification for staff, certified kitchen manager training</td>
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<td>Education during inspection visits</td>
<td>Serving Safe Food Alberta</td>
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<td>Engineering and equipment use</td>
<td>Mandatory glove use, hand sanitization facilities</td>
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<td>Managerial intervention</td>
<td>Sick leave/reporting policies, designated food handling assignments to reduce cross contamination</td>
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<td>Disclosure program</td>
<td>Online database of inspection results, Grade card program, Dinesafe, Scores on the Doors</td>
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<td>Award and recognition for hygiene compliance</td>
<td>Elite smiley face, Elite star award</td>
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<td>Internal quality assurance</td>
<td>Quality assurance program for inspection visits</td>
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<td>Outbreak surveillance</td>
<td>Reportable Disease Information System [RDIS], Integrated Public Health Information System [IPHIS]</td>
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<td>Community partnerships</td>
<td>Partnership with ethnic restaurant associations</td>
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Interventions Reviewed

1) Inspection disclosure systems
2) Food safety enforcement (Routine Inspection)
3) Mandatory food handler training and certified kitchen manager training
4) Engineering and managerial interventions
Intervention Assessment Model

Findings: Inspection Disclosure System

- Improvements in inspection performance
- Inconclusive evidence on food borne illness rates
- Unintended effects on inspector, operator & consumer behaviour
Examples of Different Inspection Notices (or Sign) System

Letter Grades

Numerical Scores

Colour Cards

Statement Cards

Symbol

Award Schemes

Paige Schell, Practicum Student
Ministry of Health and Long-Term Care, Ontario
Change in Score Distribution (Los Angeles)

Change in Score Distribution (New York)

How Not to Hide Inspection Grades

How Not to Hide Inspection Grades


Source: http://www.failblog.org
Findings: Routine Inspection

- Stricter enforcement policies alone did not improve food safety
- Successes seen in programs where education was provided in conjunction with inspection
- Evidence on frequency of inspection was inconclusive
Findings: Food Handler Training

• Benefits for having certified kitchen/food manager
• Inconclusive evidence on mandatory food handler training
• On-site/demonstrative training showed positive benefits
Findings: Engineering & Managerial

- Glove use was efficacious in lab setting but not in practice
- Hand washing engineering
  - Water temperature did not improve food safety
  - Paper towel as a better drying agent than hand dryers
- Food safety infosheets showed improvements
- Paid sick leave may yield food safety benefits
Examples of food safety infosheet

Food safety infosheet August 2, 2012
www.foodsafetyinfosheets.com

Storing low-acid foods in a jar and sealing them without either acidifying or processing using pressure creates the ideal conditions for toxin formation.

Tested recipes and directions for safe canning can be found at the National Center for Home Food Preservation: nchfp.ars.usda.gov.

Three attendees at a private gathering in Oregon were hospitalized in July 2012 after eating foods that contained the botulism toxin. The ill individuals shared beets that had not been canned properly. The beets had been placed into jars, heated in a boiling water bath and then stored at room temperature. The lack of oxygen, low-acid environment and room temperature create ideal conditions for Clostridium botulinum to germinate and create the toxin.

While boiling water bath temperatures will kill many foodborne pathogens, Clostridium botulinum spores are tough and require higher heat to be inactivated. The only way to do this in a home kitchen is through the use of a pressure canner.

Low-acid foods (pH greater than 4.6) like beets cannot be safely canned using a boiling water bath unless acidified according to a tested recipe.

Clostridium botulinum spores in low and foods that come from the soil. After heating the spores can germinate into cells that create a toxin leading to botulism in oxygen-free environment like canned foods.

A plot of beets needs to be processed for 30 min at 11 lb if using a dial gauge or 15 min using a weighted gauge pressure cooker at sea level.

Refrigerated pressure will increase at higher altitudes; time will increase for longer container heat.

Contact the National Center for Home Food Preservation, http://www.ars.usda.gov/nchfp/ for altitude adjustments and tested recipes.

FOR MORE INFORMATION CONTACT BEN CHAPMAN, BENJAMIN.CHAPMAN@KSU.EDU OR DOUG POWELL, DPowell@KSU.EDU

Ben Chapman,
Kansas State University  http://foodsafetyinfosheets.wordpress.com/
Discussion

• Study designs in peer reviewed literature: do intervention meet the needs of public health inspectors?

• Efficacy → effectiveness → practicality

• Unintended effects of interventions

• Evaluation of interventions are lacking
Discussion: Planning & Evaluation

Transparency and awareness

Engagement and consultation

Compliance

Public health benefit (?)

Resource constraints
Evaluation of Programs

Evidence Gaps & Limitations

- Studies need to account for food handler behaviour’s effect on intervention
- Interventions addressing food safety culture are needed
- Evaluations of food safety program effectiveness are not readily accessible
Thank You

Questions?
Comments?

Evidence reviews (draft) available on request

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www.ncceh.ca | www.ccnse.ca

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