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Outline

• Background & rationale
• Objectives
• Methodology
• Interview tool
• Results & key findings
• Conclusions
Background

• In Canada, an estimated 1 in 8 people (4 million) experience foodborne illness each year (Thomas et al., 2013)

• Many partners involved in food safety & foodborne illness prevention

• Important to identify food safety behaviours that place people at risk for contact with foodborne pathogens

• Information on consumer food safety practices in the home can help target food safety campaigns to support reduction of foodborne illness
Rationale

• PHAC led a review of Canadian consumer food safety practices literature (Nesbitt et al., 2014) which identified a need for a baseline study to evaluate current food safety knowledge and practices among Canadians

• National Strategy for the Control of Poultry-Related Human Salmonella Enteritidis Illness in Canada
  – Data need identified to inform the development of targeted consumer education, and messaging, to address handling, storage and preparation of poultry and eggs, including processed chicken.

➢ To address these needs, questions related to consumer food safety knowledge and practices were developed in consultation with stakeholders and incorporated into the Foodbook Study
Foodbook Study

‘Foodbook’ was a population-based study in all Canadian provinces and territories that provides essential data on food, animal and water exposures over a seven-day period, that may serve as vehicles of enteric illness.

- **Module 1:** Food exposures
- **Module 2:** Drinking & recreational water exposures
- **Module 3:** Animal-related exposures
- **Module 4:** Food safety knowledge & practices
- **Module 5:** Acute gastrointestinal illness
Foodbook Report

- Population-based telephone study
  - 10,942 respondents from all provinces and territories
  - Land line (80%) and cell phone (20%) sampling frames

- Data available in the report: Weighted proportions of food, animal, and water exposures (7 day recall period)
  - By province/territory
  - By month
  - By age group/gender

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- **Module 1:** Food exposures
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- **Module 4:** Food safety knowledge & practices
- **Module 5:** Acute gastrointestinal illness
Food safety knowledge and practices:

Objectives

1. To describe consumer food safety knowledge and practice data nationally
2. To establish baseline prevalence of consumer food safety knowledge and behaviour practices

The data will facilitate the identification of targeted food safety education messaging and provide Canadian baseline values that can be used to assess the effectiveness of food safety education interventions
Methodology

Survey Design – Module 4 as part of Foodbook Study

• Collected evenly over 5 calendar months (Nov 2014–April 2015)
• Participants: 18 years and older from all provinces and territories
• Interviews conducted in English, French and Inuktitut; on-demand verbal translation offered for some other languages

Statistical Design

• Results were weighted using standardized weights as described in the Foodbook Report
• Significant differences among responding groups (gender and age groups: 18–29, 30–59, 60+) were tested, using a p-value cut-off of 0.05
  – Bonferroni p-value adjustments were applied for comparisons between age groups to account for multiple testing.
Interview tool development

• Questions were developed in consultation with stakeholders:
  • The Canadian Partnership for Consumer Food Safety Education board of directors, F/P/T governments, academia, and industry.

• Top 5 themes prioritized and included:
  ❖ Clean
  ❖ Separate
  ❖ Chill
  ❖ Cook
  ❖ High risk foods

➤ A final set of 12 questions organized by food safety practice themes were included in the Foodbook survey
## Respondents

Demographic characteristics of survey participants (N=2474)

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>% total respondents</th>
<th>Weighted % total</th>
<th>% Canadian population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1516</td>
<td>61.3</td>
<td>49.9</td>
<td>50.8</td>
</tr>
<tr>
<td>Male</td>
<td>958</td>
<td>38.7</td>
<td>50.1</td>
<td>49.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>N</th>
<th>% total respondents</th>
<th>Weighted % total</th>
<th>% Canadian population</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–29</td>
<td>242</td>
<td>9.8</td>
<td>8.8</td>
<td>20.6</td>
</tr>
<tr>
<td>30–59</td>
<td>801</td>
<td>32.5</td>
<td>60.3</td>
<td>53.7</td>
</tr>
<tr>
<td>60+</td>
<td>1425</td>
<td>57.5</td>
<td>30.9</td>
<td>25.7</td>
</tr>
</tbody>
</table>
Results:
Food Safety Practices
Clean

• 93% reported washing their hands after handling raw meat or poultry

• 93% reported cleaning food preparation surfaces (e.g., cutting board, counter, sink) after preparing raw meat or poultry*
  – Soap and water: 78%
  – Disinfectant/bleach/vinegar: 39%
  – Dishwasher: 29%

* open / check box question (multiple answers)
Separate

- 91% reported taking precautions to avoid cross-contamination during cutting board use for raw meat and other foods.
  - Younger respondents (18–29 yrs) reported taking precautions less often than the older two age groups (30–59 yrs & 60+yrs)

- 88% reported switching to a clean plate after barbequing or cooking raw meats
  - Males report switching to a clean plate less often than females

- 91% reported taking precautions to separate raw meat in the refrigerator
  - Males reported taking precautions to separate raw meat in the refrigerator less often than females
**Cook**

Reported practices for determining when meat is cooked enough to eat

<table>
<thead>
<tr>
<th>Visually (i.e. no pink meat visible)</th>
<th>Weighted %</th>
<th>Gender</th>
<th>Age group (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>65.3</td>
<td>63.9</td>
<td>66.6</td>
</tr>
<tr>
<td>Always cook thoroughly</td>
<td>29.2</td>
<td>26.2</td>
<td>32.1</td>
</tr>
<tr>
<td>Thermometer</td>
<td>29.0</td>
<td>26.3</td>
<td>31.7</td>
</tr>
</tbody>
</table>

- 29% report using a thermometer to know when meat is cooked
- 18–29 age group more often report they visually assess when meat is cooked
Cook

Reported thermometer use when cooking the following meats:

- Whole turkey: 41.7%
- Roasts: 35.7%
- Whole chicken: 33.2%
- Pork cuts: 12.9%
- Chicken or turkey pieces: 12.3%
- Steak: 10.5%
- Any type of ground meat or meat mixtures: 8.9%
- Fish: 3.5%

- Lower reported thermometer use for poultry pieces than whole poultry
- Consistent for all age and gender groups
**Cook**

- 87% report following cooking instructions on food labels
  - Males (83%) lower than females (91%)

**Chill**

- 81% reported refrigerating leftovers within 2 hours after cooking limit

http://www.befoodsafe.ca
Results: Food Safety Knowledge

Food Safety Knowledge

Have heard of risks associated with the following foods

Respondents are most aware of risks associated with chicken and hamburger

Respondents are least aware of risks associated with frozen chicken nuggets

*“Control” food items (not high risk)
Food Safety Knowledge

Have heard of risks associated with the following foods

*Significant difference between respondents aged 60+ compared to respondents aged 30–59 years
## Food Safety Knowledge

### Knowledge of activities that could cause foodborne illness

<table>
<thead>
<tr>
<th>Activity</th>
<th>Weighted %</th>
<th>Gender</th>
<th>Age group (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating chicken which is cooked so that the meat is still pink inside</td>
<td>84.8</td>
<td>Male</td>
<td>18–29 30–59 60+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Eating a hamburger which is cooked rare so that the meat is still pink inside</td>
<td>77.8</td>
<td>Male</td>
<td>18–29 30–59 60+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Thawing meat at room temperature</td>
<td>68.9</td>
<td>Male</td>
<td>18–29 30–59 60+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Eating salad dressing with raw egg</td>
<td>59.6</td>
<td>Male</td>
<td>18–29 30–59 60+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>Eating undercooked eggs</td>
<td>53.5</td>
<td>Male</td>
<td>18–29 30–59 60+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td></td>
</tr>
</tbody>
</table>
## Food Safety Knowledge

**Knowledge of activities that could cause foodborne illness**

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<th>Age group (years)</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>Male</td>
<td>18–29</td>
</tr>
<tr>
<td>Eating chicken which is cooked so that the meat is still pink inside</td>
<td>84.8</td>
<td>83.3</td>
<td>75.1</td>
</tr>
<tr>
<td>Eating a hamburger which is cooked rare so that the meat is still pink inside</td>
<td>77.8</td>
<td>75.7</td>
<td>59.4</td>
</tr>
<tr>
<td>Thawing meat at room temperature</td>
<td>68.9</td>
<td>61.7</td>
<td>63.2</td>
</tr>
<tr>
<td>Eating salad dressing with raw egg</td>
<td>59.6</td>
<td>51.8</td>
<td>48.2</td>
</tr>
<tr>
<td>Eating undercooked eggs</td>
<td>53.5</td>
<td>50.2</td>
<td>43.3</td>
</tr>
</tbody>
</table>
## Food Safety Knowledge

**Knowledge of activities that could cause foodborne illness**

<table>
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<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Eating chicken which is cooked so that the meat is still pink inside</td>
<td>84.8</td>
<td>83.3</td>
<td>86.2</td>
</tr>
<tr>
<td>Eating a hamburger which is cooked rare so that the meat is still pink inside</td>
<td>77.8</td>
<td>75.7</td>
<td>79.8</td>
</tr>
<tr>
<td>Thawing meat at room temperature</td>
<td>68.9</td>
<td>61.7</td>
<td>76.2</td>
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<td>51.8</td>
<td>67.5</td>
</tr>
<tr>
<td>Eating undercooked eggs</td>
<td>53.5</td>
<td>50.2</td>
<td>56.8</td>
</tr>
</tbody>
</table>
## Food Safety Knowledge

### Identification of groups that are at greater risk of foodborne illness

<table>
<thead>
<tr>
<th>Group</th>
<th>Weighted %</th>
<th>Gender</th>
<th>Age group (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>People with weakened immune systems</td>
<td>91.4</td>
<td>90.7</td>
<td>88.4 93.5 88.2</td>
</tr>
<tr>
<td>Children under six years of age</td>
<td>87.7</td>
<td>85.9</td>
<td>89.8 89.6 83.1</td>
</tr>
<tr>
<td>Elderly</td>
<td>83.3</td>
<td>83.0</td>
<td>83.3 85.8 78.6</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>75.8</td>
<td>72.9</td>
<td>81.0 78.5 69.0</td>
</tr>
</tbody>
</table>

- 62% identified all four priority groups of people at greater risk of FBI
- Knowledge was generally lowest for respondents aged 60+
- Respondent’s definition of “elderly” varied (based on age and physical limits)
- Other high risk groups identified included people with pre-existing health conditions and low socio-economic status
Key findings: What are we doing well?

- In general, majority of Canadians reported following recommended food safety practices for ‘clean’, ‘chill’ and ‘separate’ themes, responses ranging from 81–93%.

- However, this still indicates that 1 in 10 Canadians may use unsafe practices that put them at risk for foodborne illness.
Key Findings: What could be improved?

**Cook**

- Only **29%** reported using a thermometer to know when meat is cooked
  - 42–33% for whole turkey, whole chicken and roasts
  - <13% for pork cuts, chicken or turkey pieces, steak, meat ground meat and fish

- **54%** identified eating undercooked eggs could cause foodborne illness

- **69%** identified that thawing meat at room temperature could cause foodborne illness
Key Findings: What could be improved?
Considering age-group and gender:

- Higher reported rates of both *Salmonella* and *Campylobacter* illness in 20–29 year olds than 30–59 year olds and increased severity in the 60+ age group.

- Age group findings:
  - Both the 18–29 and 60+ age groups had lower awareness of several high risk foods and activities compared to the 30–59 age group (e.g. risks associated with eating raw and undercooked eggs)

- Males reported certain recommended behaviour less often than females
  - switching to a clean plate when BBQ,
  - cleaning food preparation surfaces after preparing raw meat,
  - following cooking instructions
Conclusions

• This study provides national data on consumer food safety knowledge and practices and provides Canadian baseline values that can be used to assess the effectiveness of food safety education interventions

Recommendations

• Continued targeted food safety education is needed focusing on:
  – increasing awareness of high risk foods and activities (i.e., chicken nuggets)
  – increasing thermometer use when cooking meat and poultry
  – messaging for specific groups including older and young adults
Access to Foodbook Data

• Journal Publication
  ➢ Available in October Issue of Journal of Food Protection

![Research Paper]

Canadian Consumer Food Safety Practices and Knowledge: Foodbook Study

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Download the Foodbook Report

Request the Data Set
➢ The raw data set is available for public health research, on request (foodbook@phac-aspc.gc.ca)
Acknowledgements

- Andrea Nesbitt
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- Kate Thomas
- Regan Murray

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- Federal/Provincial/Territorial Food Safety Partners
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QUESTIONS?

Thank you

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