“4 Day Throw Away”
A Social Marketing Campaign Using Social Media
High Risk Populations for Foodborne Illness

- Infants and preschool-age children
- Pregnant women
- Elderly people
- People taking certain medications
- People who are seriously ill
Incidence of Salmonella Infections by Age, 2008

Source: CDC. Preliminary FoodNet Data, 2008. See also Roberts et al. The Long-Term Health Outcomes of Selected Foodborne Pathogens, 2009.

Pew Health Group, 2010; US Department of Health and Human Services, 2000
Incidence of *E. coli* O157:H7 Infections by Age, 2008


Pew Health Group, 2010; US Department of Health and Human Services, 2000
Incidence of *Campylobacter* Infections by Age, 2008

Source: CDC. Preliminary FoodNet Data, 2008. See also Roberts et al. *The Long-Term Health Outcomes of Selected Foodborne Pathogens*, 2009.****

Pew Health Group, 2010; US Department of Health and Human Services, 2000
Incidence of *Listeria monocytogenes* Infections by Age, 2008

Source: CDC. Preliminary FoodNet Data, 2008. See also Roberts et al. *The Long-Term Health Outcomes of Selected Foodborne Pathogens*, 2009.****

Pew Health Group, 2010; US Department of Health and Human Services, 2000
Incidence of *Shigella* Infections by Age, 2008

![Bar chart showing incidence of *Shigella* infections by age group.]

Source: CDC. Preliminary FoodNet Data, 2008. See also Roberts et al. *The Long-Term Health Outcomes of Selected Foodborne Pathogens*, 2009.***
Pew Health Group, 2010; US Department of Health and Human Services, 2000
Program Objectives

• To explore food safety knowledge and practices of the main food preparers in families with young children using the Health Belief Model (HBM) constructs.
  – Perceived Severity, Perceived Susceptibility, Barriers, Benefits, Self-Efficacy, Cues to Action

• To develop a food safety social marketing campaign based on the results of the focus groups and survey.

• To compare the use of social media and traditional campaign methods.
Research Conducted

• Focus groups with the main food preparer in families with children under 10

• Nationwide survey
Focus Group Methodology

- Recruited main food handler in families with young children from 2 Midwestern States
- Developed interview script based on HBM
- Reviewed by food safety experts for face validity
- Conducted pilot focus group to test instrument
- Revised interview script
- One researcher conducted all focus groups
- Discussions were audio recorded with an observer taking written notes (Krueger methodology)
- Tapes were transcribed
- Focus groups scripts analyzed for themes
Focus Group Results

• Perceived Susceptibility
  – Understood that children-older adults at risk / “Doesn’t happen to me”

• Perceived Severity
  – Understand symptoms/ treatment

• Perceived Benefits
  – Use of safe practices would avoid inconveniences associated with illness

• Perceived Barriers
  – Time / Children / Knowledge -- lack of knowledge for handling leftovers

• Self- Efficacy
  – Confident in practices when under own control

• Cues to Action
  – Educational material -- quick, easy-to-read, shocking, eye-catching

Health Belief Model (HBM)

- Perceived Severity
- Perceived Susceptibility
- Perceived Threat
- Perceived Benefits
- Perceived Barriers
- Cues to Action
- Self-Efficacy
- Likelihood of Action
- Behavior Change
Survey Methodology

FOOD HANDLING SURVEY
for families with young children
Survey Methodology

• Survey
  – Food Handling Practices (based on FightBac! concepts)
  – Food Safety Knowledge (based on FightBac! concepts)
  – Beliefs (based on HBM)
  – Demographics

• Development
  – pilot tested, eliminated questions based on Statistical evaluation Cronbach’s Alpha

• Final Survey -- 4 versions

• Random national sample of families with young children

• Descriptive and statistical analysis use SPSS

Results

Research Model of the Relationship between Knowledge and Health Belief Model Constructs with Safe Food Handling Practices based on Spearman’s rank correlation coefficient (rho)

- **Knowledge**: Not significant
  - Clean: Not significant
  - Chill: ρ = 0.270, p < 0.01, n = 148
  - Chill: Not significant
  - Separate: ρ = 0.227, p < 0.05, n = 136
  - Cook: ρ = 0.250, p < 0.01, n = 115

- **Health Belief Model**
  - **Perceived severity**
    - Clean: ρ = 0.219, p < 0.01, n = 115
    - Chill: ρ = 0.249, p < 0.01, n = 136
    - Cook: ρ = 0.280, p < 0.05, n = 115
  - **Perceived susceptibility**
    - Clean: ρ = 0.233, p < 0.05, n = 98
    - Chill: Not significant
    - Chill: Not significant
    - Separate: Not significant
    - Cook: ρ = 0.235, p < 0.05, n = 115
  - **Cues to safe food handling**
    - Clean: ρ = 0.193, p < 0.05, n = 98
    - Chill: Not significant
    - Chill: Not significant
    - Separate: ρ = 0.157, p < 0.05, n = 136
    - Cook: ρ = 0.257, p < 0.01, n = 115
  - **Self-efficacy**
    - Clean: ρ = 0.333, p < 0.01, n = 98
    - Chill: ρ = 0.182, p < 0.05, n = 148
    - Chill: α = 0.157, p < 0.05, n = 154
    - Separate: ρ = 0.187, p < 0.05, n = 136
    - Cook: Not significant


*Indicates all food handling practice questions within chill concept, excluding practice questions relating to duration of storage for leftover food.

Indicates food handling practices questions within chill concept, relating to duration of storage for leftover food.
# Development of a Social Marketing Campaign

<table>
<thead>
<tr>
<th>Traditional Campaign</th>
<th>Viral Campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>News releases</td>
<td>Website</td>
</tr>
<tr>
<td>Grocery store visits</td>
<td>YouTube videos</td>
</tr>
<tr>
<td>TV appearances</td>
<td>Facebook</td>
</tr>
<tr>
<td>Magnet</td>
<td>Twitter</td>
</tr>
<tr>
<td>Website</td>
<td>iPhone/iPad app</td>
</tr>
<tr>
<td>Poster with tear off sheets</td>
<td></td>
</tr>
<tr>
<td>YouTube videos</td>
<td></td>
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</tbody>
</table>
Slogan

4 DAY THROW AWAY
Mascot
Magnet/ Poster

4 DAY THROW AWAY

PROTECTING YOU FROM BAD LEFTOVERS

www.4daythrowaway.org
Website

www.4daythrowaway.org

www.fourdaythrowaway.org

http://itunes.apple.com/app/leftovers/id427307538?mt=8
Evaluation Methods

- Traditional
  - Grocery store intercept

- Social Media
<table>
<thead>
<tr>
<th>Location:</th>
<th>Number:</th>
<th>Gender:</th>
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**How long do you keep leftovers:**

<table>
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<tr>
<th>Location:</th>
<th>Number:</th>
<th>Gender:</th>
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<tbody>
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</table>

**Have you heard the recommendations on how long to keep leftovers:**

*YES* Where/How did you hear it:  
*NO* Have you seen or heard of 4 Day Throw Away:

<table>
<thead>
<tr>
<th>Location:</th>
<th>Number:</th>
<th>Gender:</th>
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</tbody>
</table>

**How comfortable is it for you to throw leftovers away after 4 days:**

1 = "not at all"  5 = "very comfortable"

<table>
<thead>
<tr>
<th>Location:</th>
<th>Number:</th>
<th>Gender:</th>
</tr>
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**Have you heard the recommendations on how long to keep leftovers:**

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</table>

**How comfortable is it for you to throw leftovers away after 4 days:**

1 = "not at all"  5 = "very comfortable"
## Results

**Grocery Store Intercept Survey Results from 6 Midwestern Cities**

<table>
<thead>
<tr>
<th></th>
<th>Test Sites (n = 300)</th>
<th>Control Sites (n= 300)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Awareness of Campaign</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Prompted</td>
<td>40 13</td>
<td>3 1</td>
</tr>
<tr>
<td>- Unprompted</td>
<td>30 12</td>
<td>0 0</td>
</tr>
<tr>
<td><strong>Current Behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(≤ 4 days)</td>
<td>149 50</td>
<td>115 38</td>
</tr>
<tr>
<td><strong>Intended Behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(comfortable/ very comfortable)</td>
<td>284 95</td>
<td>282 94</td>
</tr>
</tbody>
</table>
Implementation and Effectiveness Evaluation – Social Media

• Data was collected from the social media sites used in the campaign

• Quantitative data collected included:
  – Number of friends on Facebook
  – Twitter followers
  – Views on YouTube
  – Visits on the website
  – Results from the polling questions were collected as quantitative data

• Qualitative data included comments extracted from all of the social media outlets utilized
Results

• YouTube videos - over 12,000 views combined. No comments have been left.

• Twitter account - over 50 followers of #4 and no comments recorded by followers on the page.

• Facebook page - 150 “friends” with over 18,000 post views.

## Results

<table>
<thead>
<tr>
<th>Table 2: Selected Facebook Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I didn't listen and ate last weekend's leftover chicken tacos...I've learned my lesson. 4 days and throw it away!”  November 18, 2010 at 5:02pm</td>
</tr>
<tr>
<td>“Our frig is cleaner lately, but it's really hard to part with some leftovers!” November 17, 2010 at 9:08pm</td>
</tr>
<tr>
<td>“My husband and I usually take our leftovers to work the next day for lunch. So, we usually don't have leftovers past 2 days.” November 23, 2010 at 8:35pm</td>
</tr>
<tr>
<td>“I have teenagers -- so leftovers usually aren't an issue. But when we have had leftovers, I used to chuck them out if they'd been in the fridge a week. As I've learned about this campaign I've revised that to 4 days.”</td>
</tr>
<tr>
<td>“The trick is to think about WHEN you will eat leftovers. If it will be more than 4 days freeze it.”</td>
</tr>
<tr>
<td>“I thought I was going to see #4 show up in our kitchen last night!...I am still working on Kurt to get on board with the 4 day rule! It is nice to have these guidelines from ISU and UNL back me up when I argue with his &quot;scientific&quot; method of smelling and looking at leftovers to decide if they are OK to eat.”</td>
</tr>
<tr>
<td>“Practicing Food Safety means keeping healthy!”</td>
</tr>
<tr>
<td>“Can you eat bean burritos stored in the fridge &quot;on&quot; the 4th day, cuz I took a bite of a bean burrito after heating it up, and i am a bit worried. I tossed it out tho...”</td>
</tr>
</tbody>
</table>
Additional Educational Materials

Food Safety for Families

Hand Washing

Washing Hands Will Help to Keep You and Your Children Healthy.

Dear Parents,

We all teach our children the importance of washing, but one thing we don’t want them to wash is bacteria (germs). Hand washing is critical to prevent the spread of bacteria, which helps reduce illness and the spread of infections. Always wash hands before preparing or eating any food item, after using the bathroom, sneezing, coughing, changing diapers, and playing outside or playing with a pet. Teach your children to wash their hands often to prevent the spread of illness and disease caused from bacteria.

What’s Your Hand Washing Grade?
The Soap and Detergent Association (SDA) gives Americans a B+ on hand hygiene. More than 90% said they washed their hands after going to the bathroom. But 39% of the people said they never wash their hands after coughing or sneezing. While 46% wash their hands for 15 seconds or less. The Centers for Disease Control and Prevention and SDA recommend washing with soap and water for at least 15-20 seconds.

What Is 15 Seconds?
Sing Happy Birthday 2 times.

Follow these 6 Simple Steps to Proper Hand Washing

1. Wet hands
2. Apply soap
3. Scrub hands
4. Dry hands
5. Paper towel or cloth towel?
6. Turn off lights

Paper Towel or Cloth Towel?
Clasp towels can be used instead of paper towels in your home. Assign each person their own cloth towel for drying their hands. Change with clean, fresh towels only. Wash the dirty towel in the washer on the hot cycle with detergent.

FightBac®
Bacteria (germs), viruses and parasites are everywhere in the environment. They are organisms that you cannot see, smell, or taste. In fact, they can contaminate food and cause life-threatening illness. Food borne illness (food poisoning) can strike anyone, especially young children, pregnant women (it endangers their unborn babies too), elderly adults, and persons with weakened immune systems.

What is your Hand Washing Score?

Think about all the activities that you did today. Did you wash your hands:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
<th>Did Not Do Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>After going to the bathroom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After changing diapers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After coughing or sneezing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before preparing breakfast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before eating breakfast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before preparing lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before eating lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before preparing dinner (supper)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before eating dinner (supper)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before AND after handling raw meat or poultry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before AND after handling raw fruits/vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After petting your dog or cat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After handling the garbage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Give 1 point for each Yes. Subtract 1 point for each NO. What is your Score????
Newsletter Topics

- Handwashing
- Clean
- Separate
- Cook
- Chill
- Refrigerator Safety
- Safe Grocery Shopping
- Produce Safety
- Microwave Oven Safety
- Leftovers

- Summer Cookouts and Picnics
- Egg Safety
- Turkey Safety
- Holiday Safety
- Pack Food Safety with Your Child’s School Lunch
- Breast Feeding Safety
- Formula Feeding Safety
- Solid Foods Safety
Unanticipated Needs

Food Safety for Families

Safe Practices for Breast Milk

Dear Mothers,

You want the best for your infant and that is why you are thinking about breastfeeding. Breastfeeding is the optimal way of providing ideal food for your infant. Breastfeeding is always encouraged because it has the right amount of nutrients your baby needs plus it is safer and less expensive than infant formula.

Breast milk itself contains many infection-fighting properties to protect your baby. These properties are best when breast milk is fresh. Many mothers are not able to provide fresh milk every feeding with today’s busy life. Proper handling and storage procedures are important to follow to keep your breast milk safe and your baby from becoming sick. Infants have a higher rate of many foodborne illnesses than adults. It takes less bacteria (germs) to make an infant sick than it does for an adult. Harmful bacteria are more damaging to infants because their immune systems are not fully developed.

Guidelines

Follow these simple guidelines to keep your infant safe and healthy while you’re handling and storing breast milk:

- Wash hands with soap and water before expressing or handling milk or equipment.
- When collecting milk, store in a clean, sterilized container. Screw cap baby bottles, hard plastic cups with tight caps and heavy duty bags that fit directly into nursery bottles work well.
- Clearly label milk with the date milk was expressed.
- Always use the oldest milk first.
- Do NOT mix fresh milk with fresh milk.
- It is best to use fresh milk if possible.
- Do NOT save milk from a used bottle for use at another feeding.

Storage Duration of Fresh Human Milk for Use with Healthy Full Term Infants

<table>
<thead>
<tr>
<th>Location</th>
<th>Temperature</th>
<th>Duration</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countertop, table</td>
<td>Room temp</td>
<td>4-6 hours</td>
<td>Baby bottle should have the cap on the nipple and keep as cool as possible. Covering the container with a cold towel may keep milk cooler.</td>
</tr>
<tr>
<td>Insulated cooler bag</td>
<td>5-39°F</td>
<td>24 hours</td>
<td>Keep ice packs in contact with milk containers at all times, limit opening cooler bag. Keep cap on nipple.</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>39°F</td>
<td>5-8 days</td>
<td>Store milk in the back of the main area of the refrigerator with cap on.</td>
</tr>
</tbody>
</table>

Freezer

- Freezer compartment of a refrigerator: 5°F 2 weeks
- Freezer compartment of refrigerator with separate doors: 0°F 3-6 months
- Chest or upright deep freezer: -4°F 6-12 months

*Safely Thawing Breast Milk

- Transfer milk to the refrigerator or swirl the bag of milk in a clean bowl of warm water to thaw.
- Do NOT re-freeze breast milk once it’s been thawed.
- Avoid using a microwave oven to thaw or heat up milk because:
  - uneven heating can scald the baby
  - bottles may explode
  - the heat can destroy nutrients

http://food.unl.edu/web/safety/preparation-and-handling
Significance

• Limited research on Social Marketing Campaigns comparing Traditional and Social Media

• Our results indicate the social media did reach the target audience (young families/young people)

• Social Media is in infancy and more research needed to evaluate its educational effectiveness (behavior change???)
4 Day Throw Away Team

- University of Nebraska-Lincoln Extension Food Specialist: Julie A. Albrecht
- Iowa State University Extension Nutrition Specialist: Ruth Litchfield
- University of Nebraska-Lincoln Extension Educators: Carol Larvick, Carol Schwarz, Cindy Brison, Nancy Urbanec
- Iowa State University Extension and Outreach Program Specialists: Jan Temple, Renee Sweers, Susan Klein
- Iowa State University Extension and Outreach Communication and External Relations: Jed Findlay, Sandra Spilker, Jeanne Wiebke, Christopher Weishaar
- University of Nebraska-Lincoln Graduate Students: Katie James, Adeline Lum, Rebecca Meysenburg; Undergraduate students: Paula Patton, Kristen Stenger
- Iowa State University Graduate Student: Elizabeth Meimann
This project was conducted as part of the USDA Food Safety for Families with Young Children, USDA-CSREES Project 2008-51110-19237