



Food Safety at the Market

Allison Smathers
Tobacco Trust Fund Commission
February 11, 2011



What is food safety?

Handling



Preparation




Storage




AVOID FOODBORNE ILLNESS



Foodborne illness in the US





- 48 million episodes of foodborne illness
- 55,961 hospitalizations
- 1,351 deaths



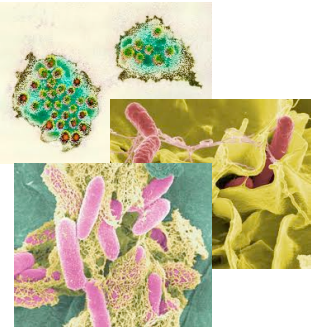

High risk populations

- Very young (underdeveloped)
- Very old (decreased immune function)
- Pregnant (immunocompromised naturally)
- Immunocompromised (AIDS, chemotherapy, transplants, external stress)




Major pathogens


- Norovirus
- *Campylobacter* spp.
- *Salmonella* spp.
- *Clostridium perfringens*
- *Staphylococcus*
- *E. coli* O157
- *Shigella* spp.
- *Listeria monocytogenes*
- Hepatitis A
- *Giardia lamblia*

Symptoms of foodborne illness



- Fever
- Muscle aches
- Loss of appetite
- Vomiting
- Fatigue
- Chills
- Nausea
- Headaches
- Dark urine
- Jaundice
- Abdominal cramps
- Diarrhea (may be bloody)




Farmers' Market Outbreaks

- *Escherichia coli* O157:H7
 - Lettuce
 - Unpasteurized Juices
- *Salmonella*
 - Melons
- *Cryptosporidium*
 - Berries
- *Listeria*
 - Cole slaw





Gast et al



Farmer's Market Outbreak

- In 2000, *Escherichia coli* O157:H7 linked to produce samples offered at a farmers' market in Fort Collins, CO.
 - 14 people were ill and two elementary school-aged children required dialysis.
- After the outbreak
 - food safety research & vendor food safety education training focused on providing safe food samples
 - development of a food safety brochure specifically addressing issues regarding direct-marketed food

Farmer's Market Outbreak

- In 2010, Salmonella linked to guacamole, salsa and uncooked tamales at a farmers' market in east-central Iowa.
- 15 people sick and three hospitalized.
- IDPH issued a warning after the outbreak
- "It's important to remember that any freshly prepared fruit and vegetable product that is not properly refrigerated can be a potential health risk because they can allow bacteria to grow."



CDC: 5 most common risk factors with foodborne illness



- Improper holding temperatures
- Inadequate cooking
- Contaminated equipment
- Poor personal hygiene
- Food from unsafe sources



Why Develop an Educational Curriculum?

- To prevent foodborne illness in NC
- Any food can cause foodborne illness -- even non-potentially hazardous foods
- Potentially hazardous foods:
 - Low acid
 - Moist
 - Contain protein
 - Keep out of the temperature danger zone



What foods sold at a farmer's market are of concern?



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Overall Goal

- Enhance the safety of products sold and practices at farmers' markets across North Carolina
- Protect the farmers' market sector by reducing risky practices
- Decrease the risk of foodborne illness outbreaks in North Carolina



Farmers markets' in NC

Shopper-based survey (10 markets, 988 responses)

- 89% willing to support local for extra \$
- 62% in favor of organic
- Likert scale (1-10) rating safety, 92% rate their market as at least an 8
- **Name the 3 main reasons you shop at a farmers' or roadside market**
 - Safety not one of them
 - Fresh, local, community support



Farmer's Market Overview

- **Baseline Evaluation**
 - Trained 16 secret shoppers
 - Assessed current food safety practices and knowledge
 - 37 farmers' markets
 - 168 vendors
 - Overall facility
 - Individual vendors



Trends in the data

- Sampling (storage and preparation)
 - Improper holding temperatures
 - Contaminated Equipment
- Handwashing and handling
 - Poor Personal Hygiene
- Labeling
- Thermometer use
 - Improper holding temperatures
- Unpasteurized “fresh” manure
 - Food from unsafe sources



Data Analysis

- Acidified foods
 - Vendor A: “pickled cucumbers, beets, squash, jellies, marmalade, jams”
 - “This vendor claims to have attended acidified school however the labels on her canned products did not have the correct labels with name, address, phone number. Did not use tested recipe for pickled squash-when asked ‘it was one my sister gave me years ago.’”
- Unpasteurized/ fresh manures
 - Vendor B: “organically, fresh-unpasteurized manure from dairy cows”
- NC processed foods
 - Vendor is farmer
 - Vendor is farmer and gathers from other local farmers
 - Vendor is processor



Data Analysis

- No thermometers
- Potential sample risks
 - Vendor D: “sample of peach given out with pocket knife”



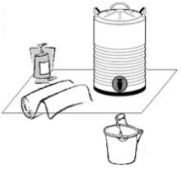

Data Analysis

- 85% of vendors were unaware of Good Agricultural Practices (GAPs) or at least unresponsive
 - Irrelevant to the farmers’ market sector.
 - Vendor C: “takes food safety seriously, but thinks GAPs is a joke, requirements not relative to farmers’ market”
- 49% of farmers’ markets had handwashing facilities in the market
 - 19% had no access to handwashing facilities
 - 87% of handwashing facilities did not display proper handwashing techniques.



Handwashing

- Best way to prevent the spread of disease
- Hand sanitizers are not a replacement but can be used as a supplement
- Handwashing stations
 - Running water
 - Soap
 - One-use disposable towels
 - Waste container

Fruit compote juice linked to E. coli O157 outbreak at festival in Winnipeg

12 Fruit Festival

Food handlers should be careful not to cross-contaminate fruit or drink products

What you can do:

- Wash and dry hands using hot, soapy water and paper towels prior to handling food.
- When storing food in coolers or trays, keep ready-to-consume produce covered and above things that may drip.

37 illnesses and 18 hospitalizations linked to outbreak

Juices have been linked to outbreaks in the past

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BIZARRE LAWSUIT SETTLED -- INVOLVING NASTY FOOD, 'DIRTY FINGER AI'

FOOD SAFETY OF WISCONSIN, INFORMATION SHEET

DIRTY FINGER AI

Food safety know-how

Don't be a Dirty Finger AI






Importance of Handwashing at the Market

- Before and after eating
- After using the bathroom
- After blowing your nose or coughing
- After petting animals
- Etc.




Sample Storage

- Use a thermometer for potentially-hazardous foods
 - Hot food must be maintained at 135°F or above
 - Cold food must be maintained at 41°F or below
- Do not to store ready-to-eat foods in direct contact with ice.
- Avoid storing raw foods in the same container as ready-to-eat foods
- Drain ice continuously to avoid pooling water in the cold storage unit



Sample Preparation

- Cross-contamination
 - Food preparer
 - Consumers' hands
 - Insects
 - Clean and sanitized utensils
 - Proper thawing of potentially hazardous foods



NC COOPERATIVE EXTENSION FOOD SAFETY INSURETY OCTOBER 16, 2010 KSTATE

Five students ill from outbreak linked to *Campylobacter* at school in UK

Environmental health officers focus on cross-contamination practices of food handlers

What you can do to reduce cross-contamination

- Clean and sanitize all surfaces (serving boards, counters) before use and ready-to-use food preparation.
- Use different utensils with knives, tongs and tapers for raw and ready-to-eat foods, if cleaning and sanitizing between use isn't practical.
- Wash and dry hands after handling raw food items. Hands contaminated with raw items can be great vehicles for cross-contamination.

Environmental health officers recommended changes to food handling practices including addressing the potential for cross-contamination and food storage.

CAMPYLOBACTERIOSIS IS THE MOST COMMON FOODBORNE ILLNESS LINKED TO BACTERIA

Salmonella and other bacteria cause and spread through cross-contamination, including by animal manure. *Campylobacter* is an often paired partner to salmonella.

FOR MORE INFORMATION CONTACT: DEBRA LEACHON, REGIONAL COORDINATOR, 919-750-7000, OR DEBRA.LEACHON@NCSTATE.EDU



Food Safety Information December 11, 2010

125 ILLNESSES LINKED TO CHURCH FUNDRAISER

BBQ PLATES PREPARED BY VOLUNTEERS LIKELY CONTAINED SALMONELLA

14 individuals who ate the BBQ plates were hospitalized with symptoms including abdominal cramping, diarrhea and vomiting.

South Carolina health officials announced a food-borne outbreak of salmonella was linked to food served at a fundraiser in Conway, SC. South Carolina health officials were cited as saying that community members began reporting illnesses after they consumed food sold at Cedar Grove Baptist Church, Spartanburg.

Salmonella health officials have not yet released information on whether they believe there was a specific food or practice that led to the illness.

What You Can Do

- Follow the same recommendations to avoid food use, and avoid cuts to fingers, sprouting, other measures.
- Avoid cross-contamination between ready-to-eat foods and potentially contaminated foods, including on platters.
- Monitor good personal hygiene and avoid food in individuals from handling food.

For more information contact the Chapman, Barbara, chapbar@ncstate.edu or Debra Leachon, dleachon@ncstate.edu.



Product Labeling

- Any packaged or processed food should have a label
 - Common name for the food product
 - List of ingredients
 - Quantity specifications ie: weight, volume, or pieces
 - Name and complete address of the business



Traceability

- Water source
- Farm
- Vendor's relation to food product
 - Grown
 - Produced
 - Sold
- Defining Safe Source



Importance of Protection

Local Communities

Patrons

Farmers' Markets



Questions

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