

Risk Behaviors of Target Audiences

Virginia “Val” Hillers, PhD, RD
Extension Food Safety Specialist, retired
Washington State University



Sensitive Populations in the U.S.

<u>Population</u>	<u>Individuals</u>	<u>% pop.</u>
Pregnancies	6.0 mil	2.1%
Neonates	4.0 mil	1.4%
Elderly (>65)	35 mil	12.5%
Nursing Care Residents	1.6 mil	0.6%
Cancer patients (non-hosp.)	8.9 mil	3.2%
Organ transplant patients	110,270	0.04%
<u>AIDS patients</u>	<u>223,000</u>	<u>0.08%</u>
Total	55.8 mil	19.9%

Sources: US Census Bureau, 2001, CDC, 1996, 1997, 2001

Risk Behaviors of Target Audiences: Pregnant Women and Seniors

Sheryl C. Cates
Senior Research Policy Analyst
RTI International



3040 Cornwallis Road
Phone 919-541-6810

■ P.O. Box 12194 ■
Fax 919-541-6683

Research Triangle Park, NC 27709
e-mail scc@rti.org

www.rti.org

*RTI International is a trade name of
Research Triangle Institute*

Pregnant Women



Food Handling Behaviors of Special Importance to Pregnant Women

- Avoid eating soft cheeses, cold smoked fish, & cold deli salads (*Lm*)
- Avoid eating hot dogs & deli meats that have not been reheated to steaming hot or 165°F (*Lm*)
- Use cheese & yogurt made from pasteurized milk (*Salmonella* species & *Lm*)
- Avoid eating foods containing raw eggs & cook eggs until firm (*SE*)
- Do not clean cat litter boxes (*Toxoplasma gondii*)
- Do not handle pets when preparing foods (*Toxoplasma gondii*)
- Do not eat shark, swordfish, king mackerel, or tilefish (methylmercury) (EPA/FDA)

Kendall et al., 2003, *JADA*.

Consumption of At-risk Foods During Pregnancy

Food	% of Focus Group Participants (n = 69)
Cold deli meats served without reheating	65
Alfalfa or other raw sprouts	56
Soft cheeses	42
Homemade raw cookie dough	40
Eggs with runny yolks	36
Smoked fish served cold without reheating	26
Raw fish, such as ceviche or sushi	15
Rare or medium-rare burgers	12
Raw (unpasteurized) milk	9

Athearn et al., *Maternal and Child Health*, 2004.

Pregnant Women – Barriers to Adoption

- Lack of knowledge
 - Pregnancy increases risk
 - Specific recommendations during pregnancy
- Belief that ready-to-eat (RTE) foods are cooked and do not require reheating
- Personal preferences
- Loss of convenience foods
- Lack of control over food preparation when eating at restaurants

Heard about Recommendation During Pregnancy

Recommendation	% of Respondents (n = 249)
Eliminate or limit caffeine intake	93
Do not smoke	91
Do not drink alcoholic beverages	90
Do not eat raw or undercooked meat	83
Do not eat fish that can contain high levels of mercury	78
Do not handle cat waste and litter boxes	77
Avoid soft cheeses made from unpasteurized milk	56
Reheat deli meats until steaming hot	47

Pregnant Women – Motivators to Adoption

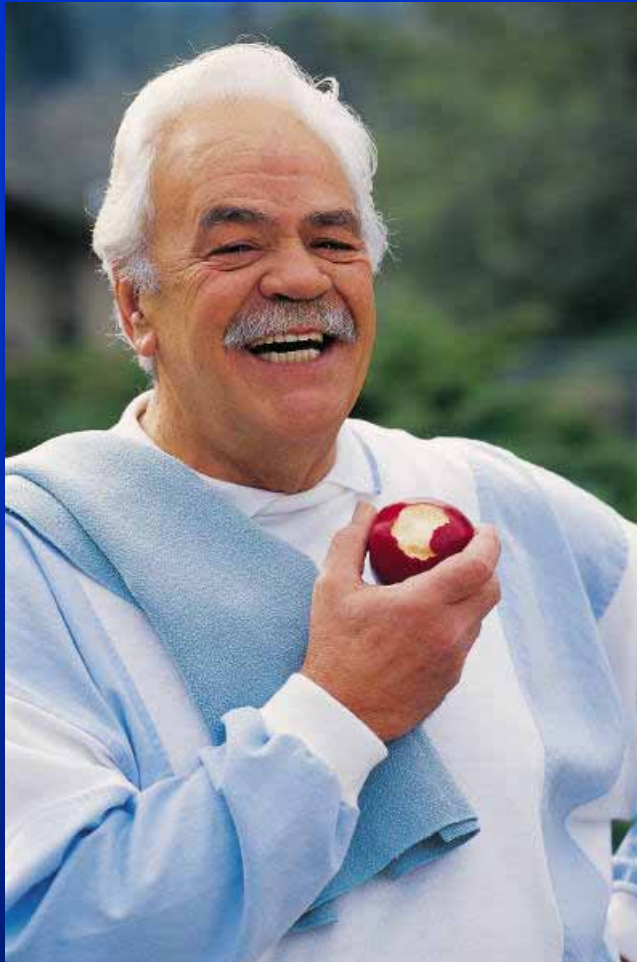
- Desire to protect health of fetus
- Changes are only temporary
- Need more information
 - Why pregnant women are at risk
 - Specific foods to avoid during pregnancy
 - Why RTE foods need to be reheated
- Receive information from credible sources



Pregnant Women – Implications for Practice

- Emphasize risk to fetus and possible outcomes
- Provide detailed information on specific recommendations
- Disseminate information via OB or other health care provider
 - Written educational materials in information packet received at first prenatal visit
 - One-on-one basis
- Also disseminate information through prenatal care information sources

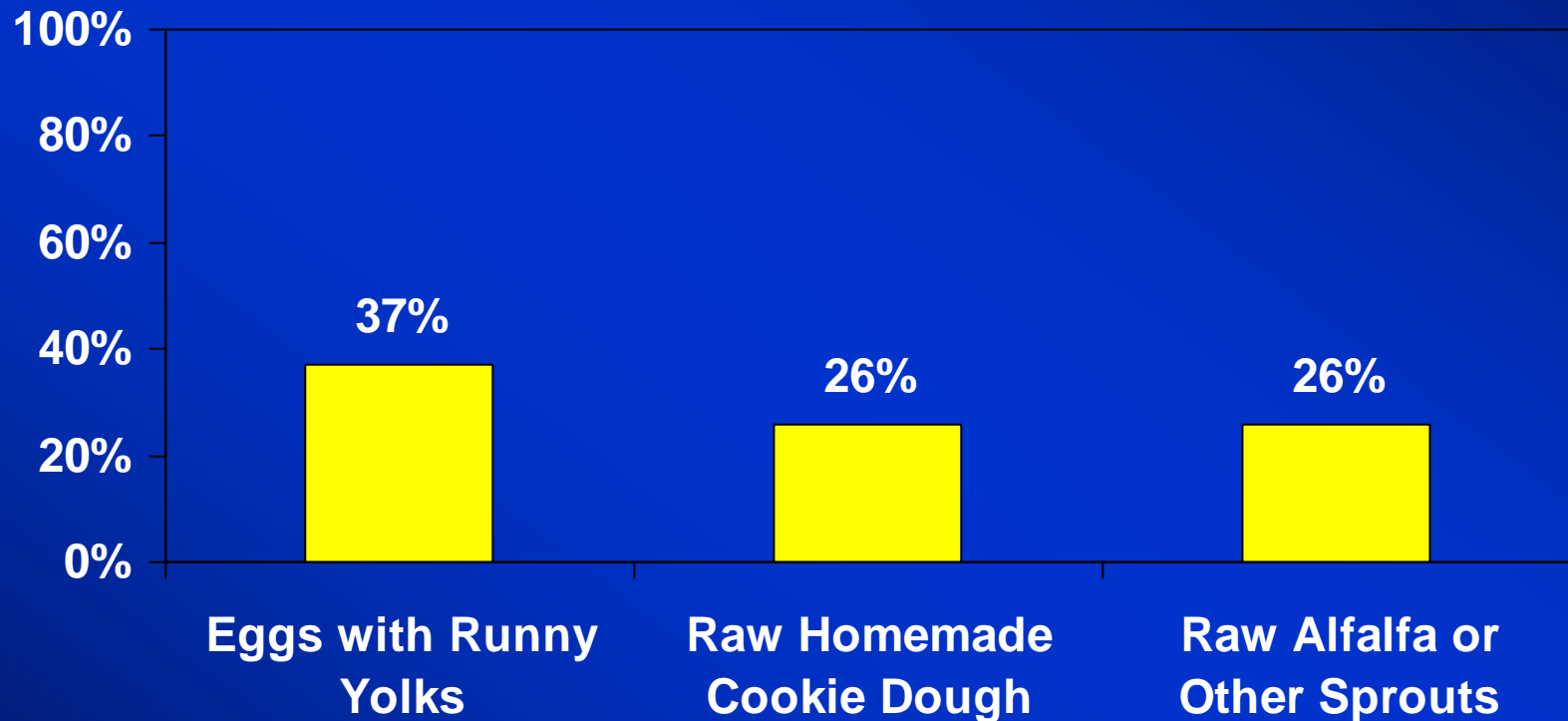
Seniors



Food Handling Behaviors of Special Importance to Seniors

- Avoid eating raw or undercooked seafood (*Vibrio* species)
- Avoid eating raw sprouts (*E. coli* O157:H7)
- Avoid eating soft cheeses, cold smoked fish, & cold deli salads (*Lm*)
- Avoid hot dogs & deli meats that have not been reheated to steaming hot or 165°F (*Lm*)
- Use cheese & yogurt made from pasteurized milk (*Salmonella* species & *Lm*)
- Avoid eating foods containing raw eggs & cook eggs until firm (*SE*)
- Properly cook shellfish & fish (Noroviruses)
- Drink only pasteurized milk & juices (*E. coli* O157:H7 & other pathogens)
- Wash utensils & surfaces after handling raw meat, poultry, seafood (*Salmonella* species & other pathogens)
- Thoroughly rinse fresh fruits & vegetables before eating (*E. coli* O157:H7)

Seniors' Consumption of At-risk Foods



Gordon et al., AIAEE Conference, 2004.

Seniors' Refrigeration and Storage Practices for RTE Foods

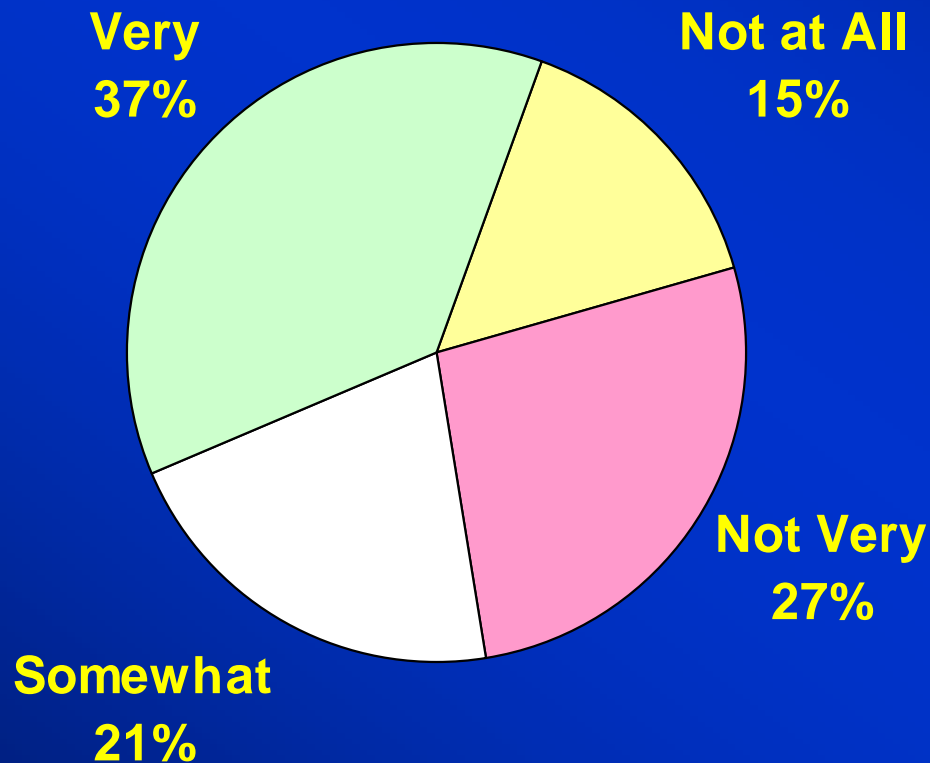
- 85% do not have a refrigerator thermometer
- 19% have their refrigerators at >40°F
- Store some RTE foods for longer than recommended time
 - Soft cheeses 69%
 - Deli meats 42%
 - Deli salads 29%

RTI International, TSU, and KSU, Web Survey data, 2005.

Seniors – Barriers to Adoption

- Lack of knowledge of recommended practices
- Belief that older adults, as a group, are more susceptible, but do not view themselves at increased risk
- Belief that seniors have safer practices compared to younger adults
- Lack of concern about contracting listeriosis
- Have not had foodborne illness in past
- Tradition—“I’ve always done it that way”
- Personal preferences

Seniors' Likelihood of Reheating Deli Meats



- Unnecessary, inconvenient, and impractical
- Negatively alter taste, texture, and color

Cates et al., forthcoming, *Food Protection Trends*.

Seniors – Motivators to Adoption

- Need more information
 - Why older adults are at risk
 - Why RTE foods need to be reheated
- Perceive themselves to be personally at risk
- Desire to take care of themselves and avoid illness
- Receive information from trusted and credible sources

Seniors – Implications for Practice

- Communicate that all older adults are at risk
- Use qualitative and quantitative methods to convey risk
- Integrate food safety information with other healthcare information
- Use concise, easy-to-understand written materials
- Disseminate information via
 - AARP
 - Government sources
 - Retirement communities, senior centers, churches



Risk Behaviors of Target Audiences: Cancer, Bone Marrow Transplants, and Solid Organ Transplants

Lydia Medeiros, Ph.D., R.D.
Associate Professor
The Ohio State University



When communicating risk of foodborne illness...

*Who are the end users
of greatest need?*

Highest risk associated with anomalies of cell mediated immune system

- People on chemotherapy
- People with bone marrow transplants
- People with solid organ transplants
- People with HIV/AIDS

Solid Organ Cancer Patients

Overall Message Learned

Aware of their immune suppression, but lack information to help them feel in control

Major Concerns

“I want to know which things are true and which are not, which things would apply if your [neutrophil] count is down.”

“The cheese...is that a blood count factor, or is that an all-the-time kind of thing?”

Bone Marrow Transplant

Overall Message Learned

Intensely managed patients in controlled environment

Major Concern

“... you know that since I’ve had the disease, I think we’ve gotten a complete education on how to prepare the food, what to do....”

Solid Organ Transplant

Overall Message Learned

Avoid dietary restrictions unless absolutely necessary

Major Concerns

- Had many dietary restrictions, due to illness
- Overall health returned by transplant
- Unwilling to continue restrictions unless absolutely necessary
- Will make changes if it affects their health

HIV/AIDS

Overall Message Learned

“If I enjoy the food I’m going to eat it. I’m on this earth once.”

Major Concerns

No appetite

“Starving”

Loss of financial resources to buy/select food

“I eat what has appeal or available.”

Informational Needs Results

Threats

- Misinformation
- Disbelief of risk
- Lack of information
- Self-guilt
- Lack of trust

Informational Needs Results

Motivators

- Chance of illness/death
- Research-based information
- Whether recommendation aligns with habitual behavior
- Clear/easy to implement advice
- Information from trusted/credible sources

Informational Needs Results

Barriers

- Personal preferences/ loss of food quality
- Whether recommendation aligns with habitual behavior
- Lack of knowledge/understanding
- Time/inconvenience
- Disbelief of risk

Informational Needs Results

Barriers - continued

- Cost
- Availability of safe products
- Overwhelmed by their disease
- Lack of trust
- Too limiting/already have limited diet
- Physical disabilities

Informational Needs Results

Cues to Action

- Specific information regarding high-risk foods
- Credible source of information
- Easy to access information
- Specific information regarding timing of concern
- Explain risks/consequences to patient
- Easy to implement information

When is *need* for the message
the greatest?

At the point of greatest physiological
susceptibility to infection

Solid Tumor Cancer

- Susceptibility greatest when neutropenic associated with myelosuppressive therapy
- Susceptibility occurs 1-2 weeks following cytotoxic agent administration – circulating PMN <1000 cells/ μ L
- Susceptibility similar to general population when neutropenia corrected, if other complicating condition absent

Bone Marrow Transplant

- Greatest susceptibility – 2 - 4 wks before engraftment until 2 - 4 wks after engraftment
- Susceptibility diminished when absolute neutrophil count $> 500/\text{mm}^3$
- Susceptibility continues for 6 - 18 mo post transplant until CD4/ CD8 ratio normalized
- Without complicating conditions, no longer susceptible once t-cell ratio normalized

Solid Organ Transplant

- Potential for susceptibility lifelong because of long-term immunosuppressive therapy
- Greatest risk for *Listeria monocytogenes* – 1 mo post transplant
- Continued susceptibility if absolute neutrophil count $< 500/ \text{mm}^3$

HIV/AIDS

- Potential for susceptibility lifelong
- Progressive susceptibility
- Asymptomatic – Opportunistic infection rare unless CD4 count <200 cells/mm³
- Symptomatic – CD4 count <200 cells/mm³, total lymphocyte count $<14\%$

Implications for Practice

The preferred delivery format is:

- Written brochures/ pamphlets/ fact sheets
- Videos in clinics/treatment facilities

Information should be provided:

- At first visit to oncologist/specialist

Implications for Practice

- Food safety information should be accurate, credible, efficacious and related to the patient
- Should contain sufficient information for individual to make the message operational
- No vague terms open to individual interpretation
- Health providers should provide information

Design and Evaluation of Food Safety Education Materials for At-Risk Audiences

Pat Kendall, Ph.D., R.D.
Professor and Extension Specialist
Colorado State University



Knowledge to Go Places

Design and Evaluation of Food Safety Education Materials for At-Risk Audiences

■ Project Team

- Lydia Medeiros, Ohio State University
- Val Hillers, Washington State University
- Pat Kendall, Colorado State University

■ Three High Risk Populations

- Pregnant Women
 - Persons infected with HIV
 - Persons with Cancer, Organ or Bone Marrow Transplants
-
- Support for work provided through a grant from the National Integrated Food Safety Initiative (NIFSI agreement 2001-51110-11364) and the National Research Initiative (NRI agreement 2002-35201-11700) of the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture

Five Step Development Process

- Define issues
- Develop initial food safety recommendations
- Assess target audience's willingness to follow recommendations, motivators and barriers
- Develop educational materials; fine-tune message
- Assess acceptability of educational materials developed for target audience

Borra et al., JADA, 2001

Theoretical Framework: Health Belief Model

- Set of beliefs contribute to motivation to engage in a health-related behavior (Chapman et al., 1995)
- Three principal components:
 - **Perceived threat**
 - Perceived susceptibility
 - Perceived severity
 - **Outcome expectations**
 - Perceived Benefits/Motivators
 - Perceived Barriers
 - **Efficacy expectations**
 - Cues to Action
 - Self-Efficacy

Use of Health Belief Model in Developing Materials on Food Safety during Pregnancy

Perceived threat

- *Perceived susceptibility* - Pregnant women must believe at greater risk of foodborne illness (FBI)
- *Perceived severity* - Must believe a FBI during pregnancy can result in severe consequences

Outcome expectations

- *Perceived benefits* - Following recommendations will help prevent FBI and result in a healthy baby
- *Perceived barriers* - Following rec's may involve making changes in food handling behaviors or temporarily giving up foods they enjoy

Efficacy expectations

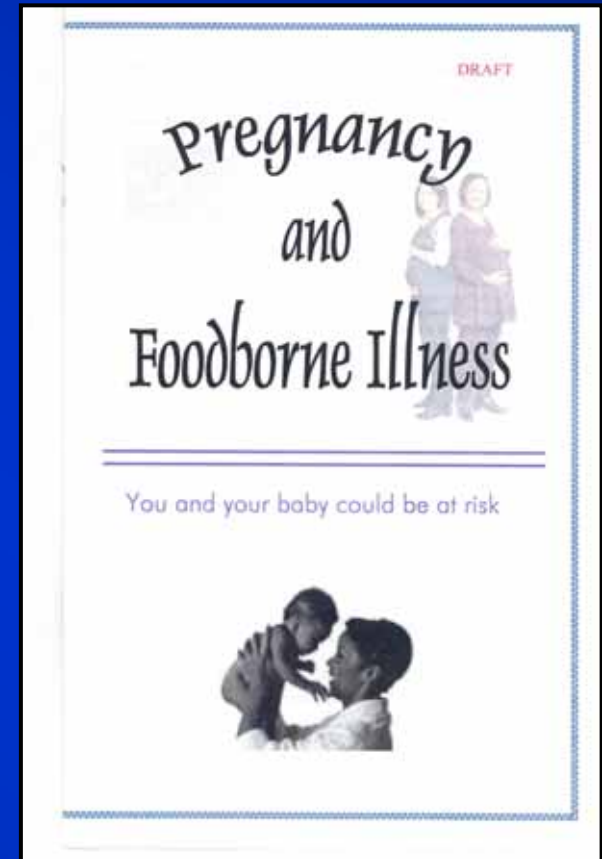
- *Cues to action* - Include practical tips and “how-to” information regarding safe food handling
- *Self-efficacy* - After reading the materials, women confident can follow the recommendations and prevent FBI

Material Prototypes for Materials for Pregnant Women

- Numerous prototypes developed using Microsoft Word
- Five prototypes selected for further development and evaluation. Each used different approach in addressing food safety concerns and varied in content and format features:
 - Length
 - Complexity of information
 - Format
 - Writing style

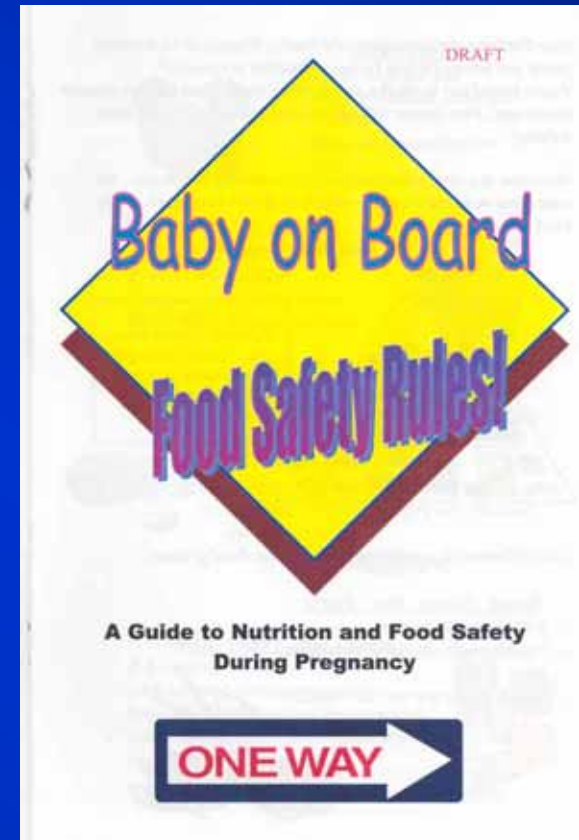
Prototype #1: “Pregnancy and Foodborne Illness: You and Your Baby Could Be at Risk”

- “Pathogen approach”
 - Detailed information regarding specific pathogens including statistics, outbreaks, symptoms and complications
- Lengthy
- In-depth, technical information
- Question and answer style
- Booklet format
- Readability = 10th grade
(SMOG Readability Formula; McLaughlin, 1969)



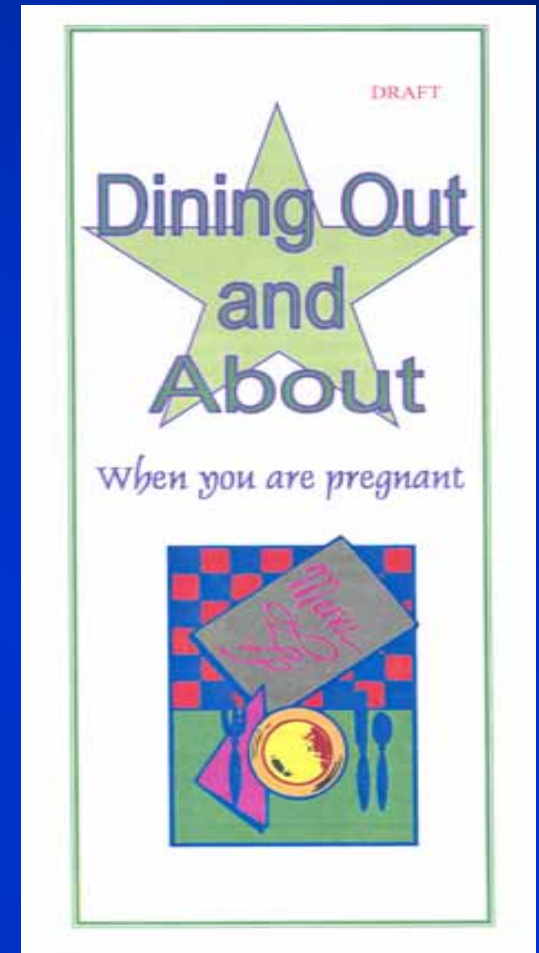
Prototype #2: “Baby on Board”

- “Food Safety and Nutrition” approach
 - Combined food safety recommendations with general nutrition information, including the Food Guide Pyramid
- Moderate in length
- Simple information
- Narrative style
- Booklet format
- Readability = 9th grade



Prototype #3: “Dining Out and About”

- “Dining Out” approach
 - Provided practical application of the recommendations in a dining away from home setting
- Moderate in length
- Moderate complexity
- Bulleted lists
- Trifold booklet
- Readability = 9th grade



Prototype #4: “Safe Shopping”

- “Shopping” approach
 - Gave practical applications of the recommendations such as safe foods to look for in grocery stores and supermarkets
- Moderate in length
- Moderate complexity
- Narrative style and bulleted lists
- One-page handout
- Readability = 10th grade

Safe Shopping for Pregnant Women

It is important for pregnant women to avoid foods that may contain harmful pathogens. Let's go shopping to get the safest items for you and your baby.

Dairy - Foods in the dairy section provide calcium and Vitamin D.

- ✓ Select only pasteurized (heat-treated) milk, cheese and yogurt. Unpasteurized (raw) products may contain harmful germs. Check the label to be sure a product is pasteurized. Also, check the "sell by" date on milk and milk products to make sure it is fresh.
- ✓ Avoid buying soft cheeses such as goat, Brie, Camembert, blue-veined, and Mexican-style cheeses (queso blanco fresco). These cheeses may contain Listeria. Instead, select hard cheeses, pasteurized processed cheese and spreads, cream cheese, cottage cheese and mozzarella because they are safe to eat.

Meat - Meats, chicken and fish provide protein, iron and zinc.

- ✓ Buy a meat thermometer and use when cooking meat and poultry (including ground meats). A meat thermometer is a reliable way to tell you when meat has reached a safe temperature. Even if meat looks done, it still may not have reached a high enough temperature to kill harmful bacteria.
- ✓ Avoid buying refrigerated smoked seafood such as salmon, trout, whitefish, cod, tuna, and mackerel. It may be labeled as "smoked" or "lox." This kind of seafood is not cooked enough to kill harmful bacteria. Instead, choose canned fish like tuna and salmon that are safe to eat.

Produce/Juices - Fruits and vegetables provide vitamins, minerals and fiber.

- ✓ Avoid buying ready-to-eat or packaged salads found in a deli case or on a salad bar. Many ingredients in deli salads provide a place for germs to grow. Also, bacteria can be spread to the salads by the person preparing them. Long storage times allow Listeria to grow.
- ✓ Avoid buying raw sprouts including alfalfa, clover, radish and broccoli sprouts. Washing sprouts may NOT make them safe to eat if the seeds they grow from contain E. coli O157:H7 or Salmonella bacteria.
- ✓ Select only pasteurized fruit juices. Check the labels on refrigerated juices to be sure they have been pasteurized. Frozen, concentrated and canned juices have been heat-treated enough to be safe, but may not be labeled.

Seafood

- ✓ Keep meat, poultry and fish separate from ready-to-eat foods in your shopping cart. Bacteria on the meat can spread to other foods in your shopping cart.
- ✓ In the deli section, make sure cooked foods are kept separated from uncooked foods. Use perishable items that are precooked or ready-to-eat as soon as possible. All home, microwave or grill hot dogs, lunchmeats and deli meats to steaming hot before eating. Heat kills Listeria that may be present on these foods. **If you prefer lunch meats cold, they can be reheated and then cooked before eating.**

WARNING:
This product has not been pasteurized and germs may contain harmful bacteria that can cause serious illness in children, the elderly, and persons with weakened immune systems.

Avoid juices with this label!

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This material has been or will be supported by the Cooperative State Research, Extension and Education Service, U. S. Department of Agriculture under Agreement No. 2002-10-0104 and 2002-10-0105.
Project team members: Pat Goodrich and Mary Schaeffer of Colorado State University; Laila Ibrahim and Garry Chan of Ohio State University; and Ted O'Brien and James Hargrett of Washington State University. Author: Janet Davis, M.S., Extension Educator, Colorado State University. Reproduction is available in all other distributions. Evidence of non-compliance may be reported through our local Cooperative Extension office.

Colorado State University
Boulder, CO 80523

Prototype #5:

“Keep Your Baby Safe During Pregnancy” magnet

- “Magnet” approach
 - Categorized risky foods in an “Instead of...Choose” table
- Short in length
- Simple information
- “Instead of...Choose” table
- Magnet
- Readability = 7th grade

Keep Your Baby Safe During Pregnancy

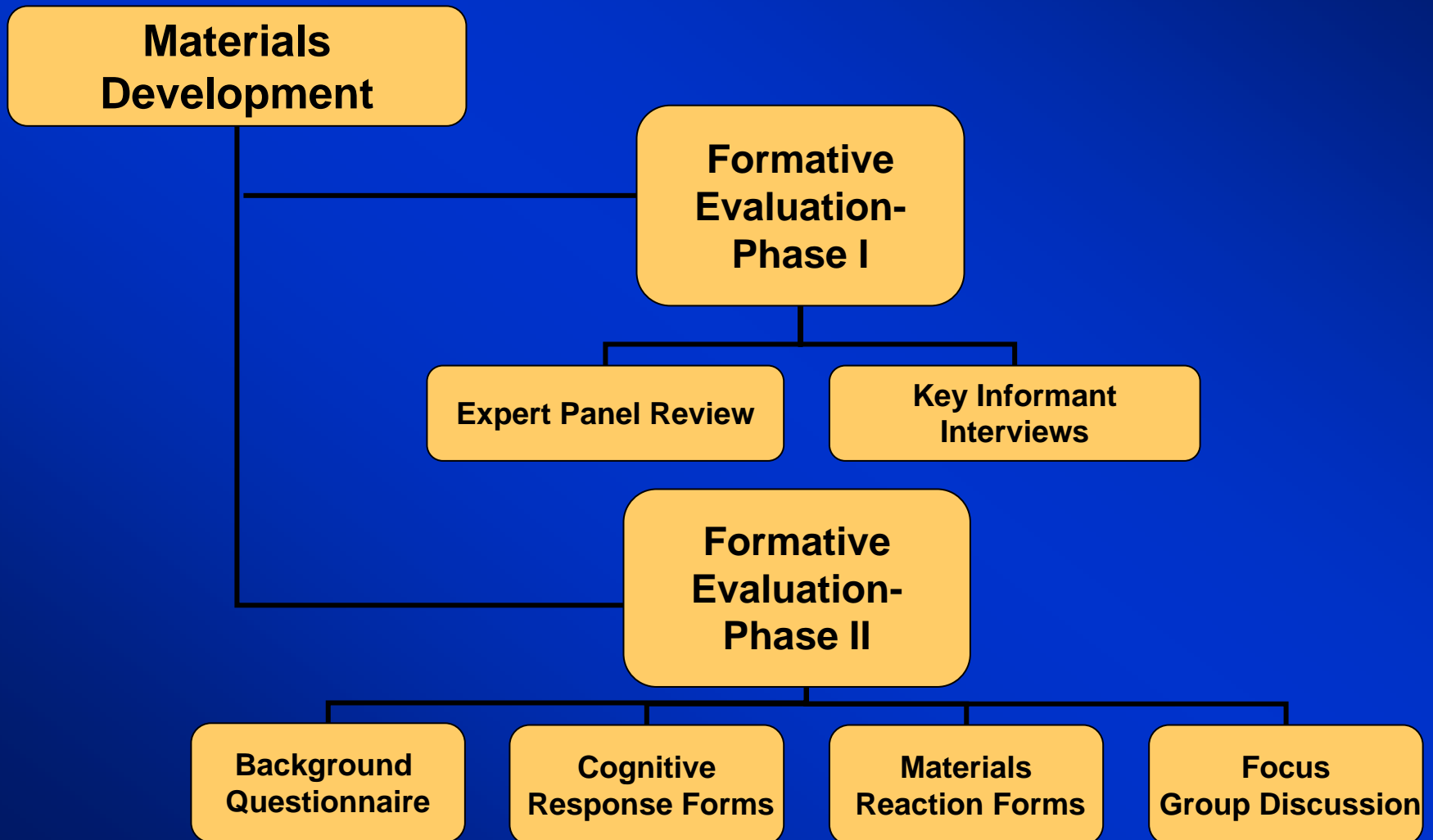


Some foods may not be safe for you to eat because they may contain pathogens that can harm your unborn baby.

Skip risky foods...learn what to choose!

Instead of...	Choose
Cold hot dogs, deli meats and luncheon meats	Hot dogs, luncheon meats and deli meats <u>reheated</u> to steaming hot
Undercooked meat and poultry	To use a food thermometer when cooking
Raw or undercooked seafood	Fully cooked seafood
Refrigerated smoked fish	Canned tuna or salmon
Deli salads	Salads prepared at home
Raw sprouts	Fresh vegetables (<i>well-cleaned</i>) or cooked sprouts
Soft cheeses such as goat, Brie, Camembert, blue-veined, and Mexican-style	Hard cheeses, pasteurized processed cheeses, cream cheese, cottage cheese, mozzarella
Raw or undercooked eggs	Eggs that are cooked until the white and yolk are firm
Raw milk	Pasteurized milk
Unpasteurized juice (May be called "fresh squeezed" or "chilled")	Frozen concentrate or canned juices OR refrigerated juices that are labeled as pasteurized

Materials Development and Evaluation Process



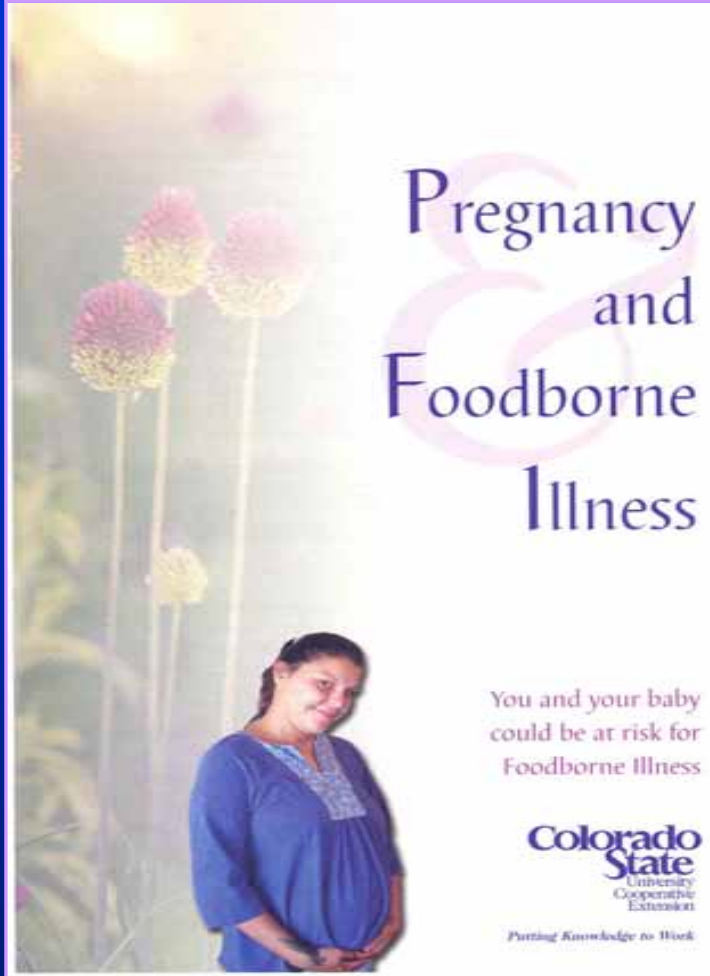
Focus Group Results with Pregnant Women

- All groups (5/5) preferred the “Pregnancy and Foodborne Illness” booklet because it contained the most information
- “Safe Shopping” handout well received by 3/5 groups due to its practicality and usefulness
- “Dining Out” booklet OK, but limited information
- “Baby on Board” booklet least liked by participants because not as informative (4/5) and information too basic (2/5)
- Magnet was considered a good reminder card (5/5)

Confidence in Preventing Foodborne Illness

- Focus Group Results with Pregnant Women:
 - ✓ All groups felt more confident and expressed willingness to follow recommendations
 - ✓ Many mentioned they would have liked to receive this information earlier in their pregnancy
 - ✓ “I wish I would have known this earlier, a long time ago.”
- Results were similar for other target audiences

Materials for Pregnant Women



Pregnancy
&
and
Foodborne
Illness

You and your baby
could be at risk for
Foodborne Illness

Colorado State
University
Cooperative
Extension

Putting Knowledge to Work

Pregnancy and Foodborne Illness

Pregnant Women: Keep You and Your Baby Safe from Foodborne Illness

A guide to safe and healthy shopping, cooking and dining during pregnancy.

Did you know...?

- During pregnancy, changes in hormones cause a woman's immune system to be lower, so that it is harder to fight off infections.
- The 6.5 million women who are pregnant each year in the U.S. are at increased risk for some types of foodborne illness.
- Some foodborne illnesses can cause a woman to have a miscarriage or stillbirth.



What does this mean?

This means that pregnant women are **MORE** likely to get a foodborne illness than other healthy adults.

Some pathogens, such as *Listeria monocytogenes* and *Toxoplasma gondii*, can pass from the mother to her unborn baby and cause serious effects such as miscarriage, stillbirth or health problems for the baby after birth, including eye and/or brain damage.

Symptoms can be mild or severe and may include:

	<ul style="list-style-type: none">• Diarrhea• Nausea/vomiting• Muscle aches• Stomach ache	<ul style="list-style-type: none">• Headache• Fever• Chills
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(You may feel like you have a mild flu)

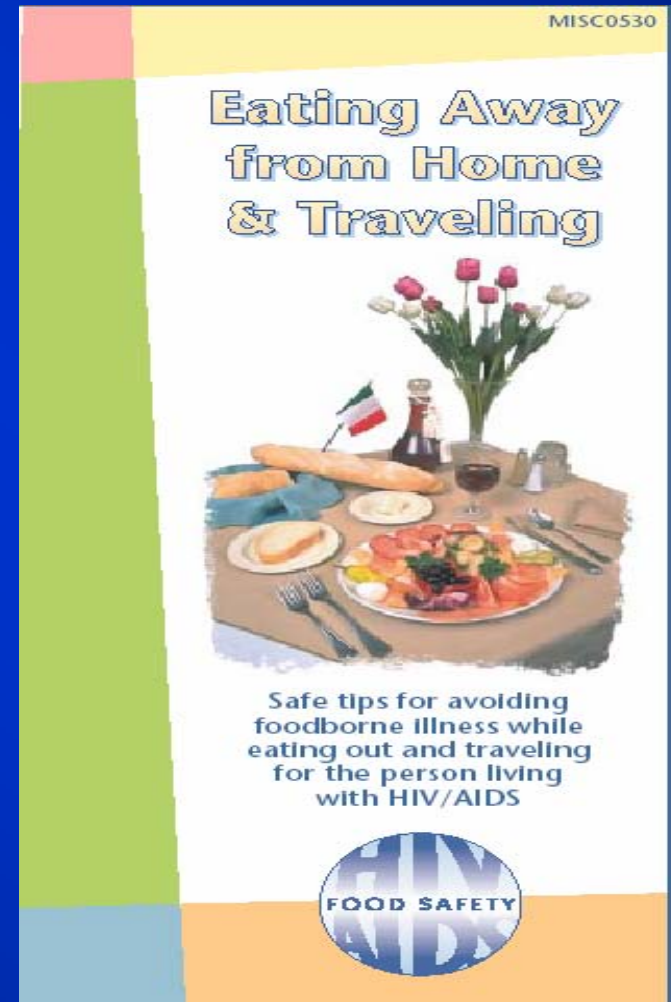
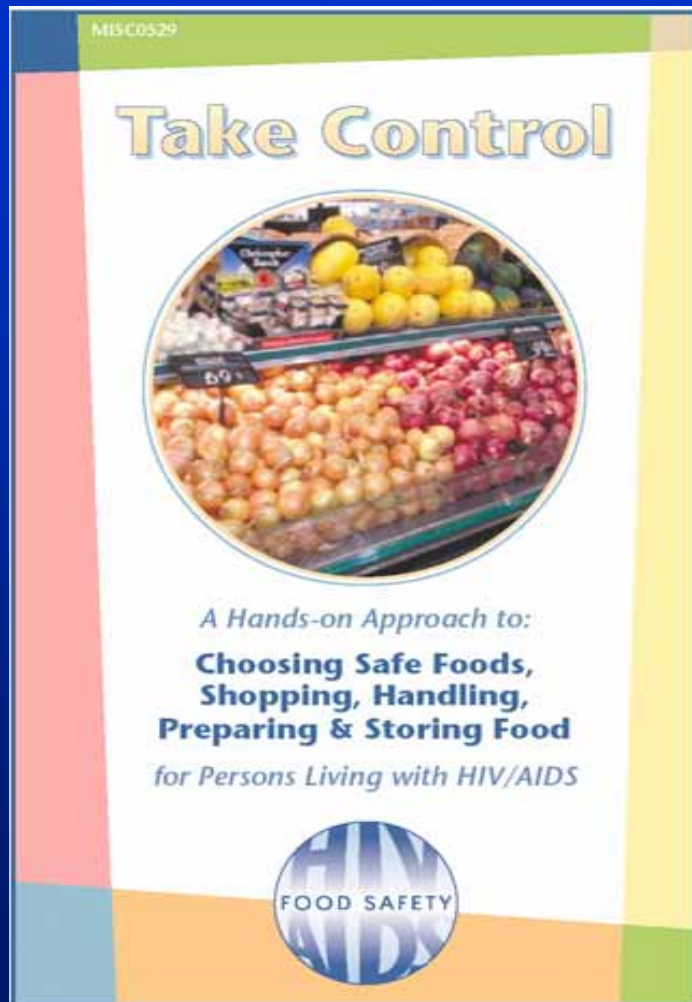
Because signs of a foodborne illness can look like symptoms common in pregnancy, you should follow these safe food tips to keep your baby safe.

If you suspect you have a foodborne illness, see your doctor right away!

Pregnant Women: Keep You and Your Baby Safe from Foodborne Illness

Materials for HIV Infected Persons

- Take Control
- Eating Away from Home & Traveling



Materials for Cancer/Transplant Patients

Preventing Foodborne Disease - Patient Group

Pathogen Approach

Refrigerated, RTE Foods - *Listeria*

Foodborne Disease and Organ Transplant Patients

A Guide for Organ Transplant Patients and Care Givers on How to Prevent Foodborne Diseases

Anyone whose immune system is not fully working is at higher risk for becoming sick from foodborne disease. This includes organ transplant patients.

Why Are You at Higher Risk?

Your risk for infection is greater in the months after your organ transplant. Once you are on maintenance levels with your medications, your risk is lessened. But, since you are taking medications that affect your immune system for life, you will also need to be cautious about infections for the rest of your life.

Since your immune system is suppressed by your medications, harmful pathogens in your food (bacteria, viruses and parasites) may cause foodborne diseases. If you do get a foodborne illness, call your doctor right away. Don't wait until your next visit. The symptoms of foodborne disease range from nausea, vomiting, and diarrhea to fever and rarely, but sometimes death.

Continue reading this pamphlet to learn how to keep your food safe. Remember, your safety and health are very important. You do not want to do anything that may cause you to get a foodborne illness. If you still have questions, ask your doctor, dietitian or primary health care provider.

Use this brochure when your risk for infection is high

- when shopping
- cooking food in your home
- when dining out

How Do You Get Foodborne Disease?

A Guide for Cancer and Transplant Patients and Their Care Givers

Did you know you have a greater risk of getting a Foodborne Disease when your immune system is weak?

Why Are You at High Risk?

You are at High Risk for infections throughout your treatments or any time you are on a medicine that may make your immune system weaker. Since your immune system is not able to fight harmful pathogens, you have a high risk for foodborne diseases. It is important to know about the different "germs" (pathogens) that cause foodborne diseases. Foodborne diseases can be fatal for cancer patients, bone marrow transplant patients and organ transplant patients.

What is a Foodborne Disease?

A foodborne disease is any disease that comes from a food you eat.

What are Pathogens?

Pathogens are organisms (such as bacteria and viruses) that cause disease.

How Will I Know if I Get a Foodborne Disease?

Foodborne diseases may give you:

- Diarrhea
- Nausea/vomiting
- Stomach ache
- Headache
- Fever
- Chills

If you suspect you have a foodborne illness, see your doctor right away!

Why are Some Foods Riskier Than Others?

Where the food comes from, how it's processed, and how it's stored and prepared, all affect the risk that foods will contain pathogens. Uncooked animal products including raw milk, meat, eggs, fish, poultry, seafood, and raw fruits and vegetables are high-risk foods. This pamphlet will give you more information on what you can do to reduce your risk of getting foodborne disease.

Which "germs" are harmful to cancer and transplant patients?

Some pathogens are more harmful than others. These include:

- Listeria monocytogenes (list-er-ee-mon-oh-sy-to-jen-eez)
- E. coli O157 (ee-coll-oh-fif-tee)
- Salmonella (sall-moh-nell-ee)
- Cryptosporidium parvum (krip-to-spoh-er-ee-um par-vum)
- Campylobacter (camp-ee-bah-ter)

A Guide for Cancer and Transplant Patients on How to Control LISTERIA MONOCYTOGENES

REFRIGERATED READY-TO-EAT FOODS

Listeria monocytogenes is a bacteria that causes a foodborne disease called listeriosis. It may grow in some foods in the refrigerator. Cooking destroys the bacteria.

Ready-to-eat food can be eaten without cooking, like deli salads, cheeses, and hot dogs. Some ready-to-eat foods do not have to be refrigerated, like crackers, some meats or organ transplant. Ready to eat food, like crackers, are not risky.

Risky foods require special care when you handle them. Sometimes, they may need to be cooked altogether.

Each year, there are about 2,500 cases of listeriosis in the United States. Some people will die from the disease.

While your best bet against listeriosis is not to eat a risky food, this may be easier said than done.

Read on for some tips to help guard your safety when you do eat these foods.

Eating "risky" food is not worth the risk!

Refrigerated Ready-to-Eat Foods

Meats	Fish and Seafood	Dairy Foods	Delish!e Salads	Vegetables
<ul style="list-style-type: none"> Fresh pork and other meat spreads Commercially packaged or deli lunch meats Uncooked hot dogs 	<ul style="list-style-type: none"> Smoked fish Refrigerated cooked or smoked seafood and fish 	<ul style="list-style-type: none"> Soft cheeses made with raw milk Rice or unspiced milk 	<ul style="list-style-type: none"> Any type made with raw food ingredients — the sea food, other home-made or commercial 	<ul style="list-style-type: none"> Unwashed, raw vegetables (especially lettuce or spinach) Rice salad sprouts

Safe Refrigerator Storage

Product	Storage Instructions
<ul style="list-style-type: none"> Prepared by the Grocery or At Home (deli sales) 	<ul style="list-style-type: none"> Store in refrigerator Be sure refrigerator temperature is 32°F-42°F Discard 4 days after preparation if the food can't be frozen or cooked to steaming hot
<ul style="list-style-type: none"> Commercially Packaged (like lunch meat or hot dogs) 	<ul style="list-style-type: none"> Freeze or store in refrigerator Be sure refrigerator temperature is 32°F-42°F Discard 4 days after opening if the food can't be frozen or cooked to steaming hot

Checklist: Listeria Monocytogenes

Call Me In Settings with Ready-to-eat foods. It can cause foodborne illness in people who have had a bone marrow or organ transplant.

Availability of Educational Materials

- Copies are available as PDF copies at:

<http://hec.osu.edu/highriskfoodsafety/resources.htm>

OR

<http://www.colostate.edu/Orgs/safefood/foodsafety/menuhr.html>

Summary of Materials Evaluation

- Participants preferred materials with in-depth, practical information
- Participants more willing to follow recommendations if supported with detailed explanation
- Health Belief Model - useful tool for message communication to high risk populations regarding foodborne illness
- Systematic development and evaluation process – ensured that specific needs of target audiences met

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Questions