

# PR/HACCP RULE EVALUATION REPORT

## Listeriosis Food Safety Messages and Delivery Mechanisms for Pregnant Women

Final Report

2/23/01

### Purpose

The Research Triangle Institute (RTI) is conducting a multi-year evaluation of the *Pathogen Reduction; Hazard Analysis and Critical Control Point (PR/HACCP) Systems; Final Rule* for the U.S. Department of Agriculture, Food Safety and Inspection Service (USDA, FSIS). As part of the evaluation study, RTI is conducting an evaluation of consumer education programs.

RTI conducted focus groups with consumers in spring 2000 to test food safety messages and to identify effective delivery mechanisms for these messages.<sup>1</sup> This study found that consumers are not aware that pregnant women are a high-risk group for foodborne illness and are unfamiliar with the bacterium *Listeria monocytogenes (Lm)*.

To help FSIS determine how to effectively reach pregnant women with food safety messages on listeriosis, RTI conducted eight focus groups with pregnant women in four different locations.<sup>2</sup> The objectives of the focus group study were to (1) test and refine existing FSIS food safety messages on listeriosis and (2) identify effective delivery mechanisms for the refined messages. In addition, we collected information on participants' concerns about foodborne illness; their general food safety knowledge; their use of safe handling practices; their food safety concerns during pregnancy; and how participants prepare and store hot dogs, luncheon/deli meats,

and deli salads, deli spreads, and pâtés containing meat or poultry.<sup>3</sup>

This report presents our key findings and recommendations, describes the study design, discusses the results of the Pre-Discussion Survey<sup>4</sup> and the focus group discussions, and presents recommendations for educating pregnant women about *Lm* and listeriosis. The Final Report notebook contains detailed summaries of each focus group and an analysis of the Pre-Discussion Survey data.

### Key Findings

The key findings from the Pre-Discussion Survey and the focus group discussions are summarized below.

#### **Concerns about Foodborne Illness, Food Safety Knowledge, Safe Handling Practices, and Food Safety during Pregnancy**

- Participants expressed confidence in their ability to safely handle and prepare food at home. However, many participants do not always follow safe practices when cooking at home (e.g., do not refrigerate leftovers immediately or do not use a food thermometer).
- Participants were unfamiliar with the bacteria *Lm* and *Campylobacter*. However, they were aware of *E. coli* and *Salmonella*.

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<sup>1</sup>See "PR/HACCP Rule Evaluation Report, Focus Group Study on Food Safety Messages and Delivery Mechanisms," 12/14/00.

<sup>2</sup>The PR/HACCP evaluation study provided funding for two of the focus groups, and FSIS's Food Safety Education Staff (FSES) provided funding for six of the focus groups.

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<sup>3</sup>Because only a small number of participants eat deli salads, deli spreads, and pâtés, we only report results for hot dogs and luncheon meats.

<sup>4</sup>Participants completed the Pre-Discussion Survey—a 39-item questionnaire that collects information on safe handling practices, preparation and storage of the targeted products, and participant demographics—prior to the focus group discussion.

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- Participants were not aware that pregnant women are a population at high-risk for foodborne illness.
- Participants reported that their obstetrician or other health care provider does not generally provide information on food safety.
- Most participants said that they have not made any changes in how they handle food since becoming pregnant because they were careful *before* becoming pregnant.

### **Preparation and Storage of Hot Dogs and Luncheon Meats**

- Since becoming pregnant, no participants always reheat their luncheon meats to steaming hot.<sup>5</sup>
- Since becoming pregnant, some participants eat hot dogs cold or do not use a cover when microwaving them.<sup>6</sup>
- Since becoming pregnant, many participants do not observe the USDA recommended storage times for some products (opened prepackaged luncheon meats and luncheon meats purchased freshly sliced from the deli).

### **Evaluation of Listeriosis Educational Materials**

Participants evaluated the two-color, four-panel brochure, "Listeriosis and Food Safety Tips," developed by USDA, FSIS (Figure 1). Participants generally liked the brochure on listeriosis.

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<sup>5</sup>USDA recommends that pregnant women reheat hot dogs and luncheon meats to steaming hot and use a cover when microwaving these products.

<sup>6</sup>Ibid.

- Participants
  - ✓ found the brochure easy to understand and very informative, and
  - ✓ described the brochure as "to the point" and did not think that it was too long.
- Participants were not familiar with the information on *Lm* and listeriosis and seemed concerned and surprised by the information presented.
- Participants wanted more information on listeriosis.
- Participants identified the following as effective messages to include in educational materials:
  - ✓ statistics on the number of illnesses and deaths attributed to *Lm* annually, and
  - ✓ words like "miscarriage" and "stillbirth."
- Participants suggested changes to improve the brochure. These suggestions are summarized in the Results section.

### **Delivery Mechanisms for Listeriosis Educational Materials**

- Participants agreed that the best way to inform pregnant women about listeriosis is through obstetricians.
- Participants also suggested disseminating information on listeriosis through books, magazines, and web sites on prenatal care.
- Participants identified the need to increase awareness of *Lm* and listeriosis among the general population through the media.

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Figure 1. Listeriosis Brochure

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Back Cover
Front Cover

**What to do if you have food that is recalled because of *Listeria monocytogenes***

Do not eat any food that is recalled and ordered off grocery store shelves. Return recalled food to the place where you bought it.

**The Federal Government plays a critical role in food safety**

The U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS) is responsible for inspecting plants that slaughter and/or process meat, poultry, and egg products. The Food and Drug Administration (FDA) oversees the safety of most other foods. Neither agency permits *Listeria monocytogenes* on cooked, ready-to-eat food. This is called "zero tolerance." As a result, Federal agencies are working with industry to identify and correct potential problem areas.

In addition, FSIS now requires plants that slaughter and process meat and poultry to use a process called the Pathogen Reduction and Hazard Analysis and Critical Control Point (HACCP) system to reduce dangerous bacteria on food. The system requires the food production industry to identify critical points where food may become contaminated and to take the necessary steps to prevent contamination.

FSIS plays an active role in investigations with CDC and FDA if a food production problem or an illness outbreak is identified that involves meat, poultry, or egg products. If necessary, the Agency prevents these food products from

going to grocery stores, restaurants, and other food service operations; can stop a plant from operating; and works with producers to recall food that has already gone to store shelves or homes.

**For More Information from the Food Safety and Inspection Service**

Consumer Inquiries: Call USDA's Meat and Poultry Hotline at 1-800-535-4555. In the Washington, DC area, call (202) 720-3333. TTY: 1-800-256-7072.

Media Inquiries (202) 720-9113  
 Constituent Inquiries (202) 720-8594  
 Congressional Inquiries (202) 720-3897  
 Food Safety Education Staff (202) 720-7943

**Food safety information from the Federal Government is on the World Wide Web:**

Food Safety and Inspection Service:  
[www.fsis.usda.gov](http://www.fsis.usda.gov)

Food and Drug Administration—  
 Food Information:  
[www.cfsan.fda.gov](http://www.cfsan.fda.gov)

Centers for Disease Control and Prevention—  
 Foodborne Diseases:  
[www.cdc.gov/ncidod/diseases/foodborn/foodborn.htm](http://www.cdc.gov/ncidod/diseases/foodborn/foodborn.htm)

Government food safety information:  
[www.foodsafety.gov](http://www.foodsafety.gov)

Food Safety and Inspection Service  
**Consumer Information From FSIS**



## Listeriosis and Food Safety Tips



**USDA**

Food Safety and Inspection Service  
 Food Safety Education Staff  
 (202) 720-7943, Fax (202) 720-1843  
[fsis.outreach@usda.gov](mailto:fsis.outreach@usda.gov)

May 1999

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**What is listeriosis?**

Listeriosis is an illness caused by eating foods contaminated with a kind of bacteria, often found in soil and water, called *Listeria monocytogenes*. Bacteria are too small to be seen without a microscope.

Most people do not get listeriosis. However, pregnant women and newborns, older adults, and people with weakened immune systems caused by cancer treatments, AIDS, diabetes, kidney disease, etc., are at risk for becoming seriously ill from eating foods that contain *Listeria monocytogenes*.

According to the Centers for Disease Control and Prevention (CDC), an estimated 1,100 people in the United States report serious illness from listeriosis each year. Of those reporting, approximately 25% die as a result of the illness.



**How do you know if you have listeriosis?**

Listeriosis has flu-like symptoms, such as fever and chills. Sometimes people have an upset stomach, but not always. If the infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur.

While infected pregnant women may experience only mild, flu-like illness, the mother's illness can be transmitted to the fetus through the placenta. This can lead to miscarriage, stillbirth, or serious health problems for her newborn child.

It takes an average of 3 weeks for someone to become ill. If you are an at-risk individual and/or have symptoms that concern you, consult your physician. Listeriosis can be treated with antibiotics.

**How does *Listeria monocytogenes* get into food?**

Animals can carry *Listeria monocytogenes* in their intestines without becoming sick. As a result, the bacteria may be spread to meat and dairy products. *Listeria monocytogenes* is killed by cooking or by other heating methods, such as pasteurization, used to produce ready-to-eat foods.

However, ready-to-eat food can become contaminated after processing within the processing plant or along the route from the plant to your plate.

Outbreaks of listeriosis are associated with ready-to-eat foods such as hot dogs, luncheon meats, cold cuts, fermented or dry sausage, and other deli-style meat and poultry. In the home, *Listeria monocytogenes* is destroyed if ready-to-eat foods are reheated to steaming hot.



**What at-risk consumers can do to prevent listeriosis and other foodborne illness**

People at risk for listeriosis and their family members or individuals preparing food for them should:

- Reheat until steaming hot the following types of ready-to-eat foods: hot dogs, luncheon meats, cold cuts, fermented and dry sausage, and other deli-style meat and poultry products. Thoroughly reheating food can help kill any bacteria that might be present. If you cannot reheat these foods, do not eat them.
- Wash hands with hot, soapy water after handling these types of ready-to-eat foods. (Wash for at least 20 seconds.) Also wash cutting boards, dishes, and utensils. Thorough washing helps eliminate any bacteria that might get on your hands or other surfaces from food before it is reheated.
- Don't eat soft cheeses such as feta, Brie, Camembert, blue-veined or Mexican-style cheese. You can eat hard cheeses, processed cheeses, cream cheese, cottage cheese, and yogurt.
- Do not drink raw, unpasteurized milk or eat foods made from it, such as unpasteurized cheese.
- Observe all expiration dates for perishable items that are precooked or ready-to-eat.

**How all consumers can prevent listeriosis and other foodborne illness**

All consumers should follow the four simple steps to food safety promoted by the food safety education program called Fight BAC!<sup>SM</sup>

**Clean:** Wash hands and surfaces often with hot, soapy water. Because *Listeria monocytogenes* can slowly grow at refrigerator temperatures, always use hot, soapy water to clean up liquid that spills in the refrigerator—including spills from packages of luncheon meats and hot dogs. Always wash hands, cutting boards, dishes, and utensils with hot, soapy water after they come in contact with raw food.

**Separate:** Don't cross-contaminate. Ready-to-eat foods and raw meat, poultry, and seafood can contain dangerous bacteria. As a result, keep these foods separate from vegetables, fruits, breads, and other foods that are already prepared for eating.

**Cook:** Cook to safe temperatures. If you are at risk for listeriosis, reheat luncheon meats, cold cuts, and other deli-style meat and poultry until they are steaming hot.

**Chill:** Refrigerate or freeze perishables, including ready-to-eat foods, within 2 hours.



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### Main Recommendations

Our main recommendations are listed below and discussed in the Recommendations section of this report:

- Educate pregnant women on steps they and people who prepare food for them can take to prevent listeriosis.
- Revise the brochure and target it specifically to pregnant women.
- Educate obstetricians so they can inform their patients.
- Disseminate information on *Lm* to pregnant women using prenatal care information sources.
- Increase awareness of *Lm* in the general population via the media.
- Educate the general population on USDA recommended storage times for foods.

### Study Design

RTI conducted a total of eight focus groups—two groups in each of four different locations (Manchester, New Hampshire; Cedar Rapids, Iowa; Salt Lake City, Utah; and Raleigh, North Carolina). We selected these locations because they are small-to-medium sized cities. For each location, we conducted one focus group with individuals who have a high school education or less and one focus group with individuals who are college graduates.

We recruited participants to reflect the racial diversity of the area in which the focus groups were conducted. Participants had to meet the following eligibility criteria: are at least 12 weeks pregnant; have primary responsibility or share responsibility for cooking in their household; prepare meals at least three times a week; are not

vegetarian; and often or sometimes eat luncheon meats, hot dogs, deli salads, or deli spreads/pâtés. Participants included women who have other children as well as those in their first pregnancy. Each group included seven or eight participants, for a total of 63 participants.

### Results

Findings from the Pre-Discussion Survey are highlighted below, along with the qualitative information gathered in the focus group discussions.

#### **Concerns about Foodborne Illness**

- Participants were somewhat or not very concerned about getting foodborne illness from food they prepare at home. Participants discussed precautions they take at home to keep food safe, such as cleanliness, proper handling, and cooking foods thoroughly. Over 90 percent of participants said that they are completely confident that the meat and poultry products they prepare at home are safe to eat.
- Participants were more concerned about getting foodborne illness from eating out than from eating food prepared at home. They expressed concern about cleanliness, improper food handling, and undercooked meat in restaurants.

#### **Food Safety Knowledge**

- Despite their confidence in how they prepare food at home, most participants described themselves as being somewhat knowledgeable about food safety and safe handling practices.
- Participants were familiar with the bacteria *E. coli* and *Salmonella* but were unfamiliar with *Lm* and *Campylobacter*.

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- Participants correctly identified meat and poultry as high-risk foods for foodborne illness.
- Some participants correctly identified children, seniors, and the immunocompromised as high-risk populations for foodborne illness, but were not aware that pregnant women are also at risk.

### **Safe Handling Practices**

Participants discussed measures they take at home to protect their families from foodborne illness. The Pre-Discussion Survey also collected information on the prevalence of certain safe handling practices. The Pre-Discussion Survey findings on participants' use of safe handling practices are summarized below.<sup>7</sup>

- Ninety-two percent of participants wash cutting boards used for cutting meat or poultry with soap and/or bleach water before using it again, or they use a different cutting board.
- Eighty-seven percent of participants wash their hands with soap after handling raw meat or poultry.
- Forty-four percent of participants own a food thermometer; most own a dial thermometer.
- Thirty-nine percent of participants immediately refrigerate leftovers like soup or stew containing meat or poultry.
- Over 20 percent of participants always or often use a food thermometer when cooking large cuts of meat, like roasts or turkeys.

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<sup>7</sup>Because a probability-based sample was not used, the results from the Pre-Discussion Survey should not be generalized to the population of pregnant women in any statistical sense.

- Only three percent of participants always or often use a food thermometer when cooking hamburgers.

These findings are generally consistent with the results of the 1998 Food and Drug Administration (FDA)/FSIS Food Safety Survey.<sup>8</sup> While the majority of participants follow proper cleaning practices, many do not refrigerate leftovers immediately or use a food thermometer to check for the safe internal temperature of meat and poultry.

### **Food Safety during Pregnancy**

- Only 8 of the 63 participants had received information on food safety from their obstetrician or physician since becoming pregnant. No participants had received information specifically on listeriosis.
- Several participants recalled reading about food safety and safe handling practices in books or magazines on prenatal care (e.g., pregnant women should not eat soft cheeses, sushi, or rare meat). A few participants had received information on food safety from Women, Infants, and Children (WIC) nutritionists. Only one participant had heard that pregnant women should reheat luncheon meats.
- Most participants said that they have not made any changes in how they handle food since becoming pregnant because they were careful *before* becoming pregnant. Some participants said that they have become more cautious about food preparation since having children.
- Some participants reported eating high-risk foods during their pregnancy (37

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<sup>8</sup>The FDA/FSIS Food Safety Survey is conducted every 5 years and collects information on consumer food safety perceptions, knowledge, and behavior.

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percent eat raw homemade cookie dough, 27 percent eat soft cheeses, and 24 percent eat dishes containing raw or uncooked eggs, like Caesar salad).

### ***Preparation of Hot Dogs and Luncheon Meats***

Table 1 summarizes participants' responses on how they prepare and store hot dogs and luncheon meats.

- Most participants reported that they are eating hot dogs and luncheon meats during their pregnancy. Of participants eating these products, about two-thirds eat hot dogs at least once a month and luncheon meats three or more times a month.
- Some participants recalled reading or hearing that hot dogs should not be consumed "raw" or cold, but did not relate this specifically to pregnant women.
- Most participants boil, microwave, or grill their hot dogs. One participant sometimes eats hot dogs cold out of the package.
- Participants who microwave their hot dogs usually do so without a cover.
- Only one participant occasionally reheats luncheon meats as a food safety precaution.
- Most participants do not currently eat deli salads, deli spreads, or pâtés and did not eat these products before their pregnancy.

### ***Storage of Hot Dogs and Luncheon Meats***

- Over 80 percent of participants observe the USDA recommended storage times

for hot dogs for both unopened and opened packages.

- Over 80 percent of participants observe the USDA recommended storage time for unopened packages of prepackaged luncheon meats. However, over 50 percent of participants eat luncheon meats after the package has been opened for longer than 5 days, which is not recommended.
- About two-thirds of participants observe the USDA recommended storage time for luncheon meat purchased sliced from the deli.
- Many participants refer to expiration dates to decide whether a product is safe to eat or should be discarded.
- Some participants knew the meanings of and understood the difference between the "sell-by" (guideline to the store) and "use-by" (guideline to the consumer) dates. Other participants said that they do not distinguish between the "sell-by" and "use-by" dates and, as a rule, do not use a product past the "sell-by" or "use-by" date.
- Some participants continue to refer to the "sell-by" and "use-by" dates after opening the package, which could potentially be an unsafe practice because storage times change after opening the packaging.

### ***Evaluation of Listeriosis Educational Materials***

Participants generally liked the brochure. Participants

- found the brochure easy to understand and very informative,
- described the brochure as "to the point" and did not think it was too long,

**Table 1. Participants' Responses on Consumption, Preparation, and Storage of Hot Dogs and Luncheon Meats (n=63)<sup>a</sup>**

	Percentage of Participants (%)
<b>Hot Dogs</b>	
Eat hot dogs during pregnancy	81
Frequency of eating hot dogs	
Less than once a month	35
1 to 2 times a month	55
3 or more times a month	10
Usual method for preparing hot dogs	
Cold out of the package	2
Boil	35
Microwave	31
Grill	26
Other (e.g., panfry or combination of methods)	6
Store <b>unopened</b> packages and then eat	
2 weeks or less <sup>b</sup>	80
Longer than 2 weeks	10
Until expiration date	4
Don't know/no answer	6
Store <b>opened</b> packages and then eat	
7 days or less or freeze after opening <sup>b</sup>	88
Longer than 7 days	6
Until expiration date	2
Don't know/no answer	4
<b>Luncheon Meats</b>	
Eat luncheon meats during pregnancy	95
Frequency of eating luncheon meats	
Less than once a month	7
1 to 2 times a month	25
3 or more times a month	68
Usual method for preparing luncheon meats	
Eat them cold	98
Heat them so they are warm	2
Store <b>unopened</b> luncheon meat packages (prepackaged) and then eat	
2 weeks or less <sup>b</sup>	82
Longer than 2 weeks	11
Until expiration date	5
Don't know/no answer	2
Store <b>opened</b> luncheon meat packages (prepackaged) and then eat	
5 days or less <sup>b</sup>	45
Longer than 5 days	53
Until expiration date	2
Store luncheon meats purchased freshly sliced from the deli and then eat	
5 days or less <sup>b</sup>	65
Longer than 5 days	35

<sup>a</sup>Because a probability-based sample was not used, the results from the Pre-Discussion Survey should not be generalized to the population of pregnant women in any statistical sense.

<sup>b</sup>Participants storing products for this time period are following the USDA recommended guidelines.

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- liked the flow of the brochure and the ordering of the information, and
- liked that phone numbers and web site addresses were provided if one wanted more information.

Participants were not familiar with the information on *Lm* and listeriosis and most seemed surprised and concerned by the information presented.

- Participants were very surprised to learn that pregnant women should reheat luncheon meats to prevent foodborne illness. One participant stated, "I was thinking I was doing everything (right) except that."
- Most participants found the statistics on the number of illnesses and deaths attributed to *Lm* concerning. One participant stated, "Three hundred people dying from it kind of seems high to me anyway." Only a few participants did not find these statistics alarming and said that the risk of contracting listeriosis was not that great.
- Participants were concerned that it might take as long as 3 weeks to get sick and that the symptoms of listeriosis are common conditions during pregnancy and are similar to the flu.
- Participants wanted more information on the illness.

Participants identified the following as effective messages to include in educational materials:

- ***Statistics on the number of illnesses and deaths attributed to *Lm* annually.*** The vast majority of participants said that the statistics help to illustrate the seriousness of the illness. Participants said that having the statistics at the front of the brochure encourages you to read

the rest of it. Some participants wanted more information, specifically, the number of illnesses and deaths associated with fetuses and newborns.

- ***Words like "miscarriage" and "stillbirth."*** Participants said that although these are scary words for pregnant women, it is important to know the possible outcomes of the illness. Participants said that the use of such words helps to get pregnant women's attention and illustrate the seriousness of the illness.

Participants suggested the following changes to improve the brochure:

- ***Change the title so it gets people's attention.***
  - ✓ Drop the phrase "Food Safety Tips" from the title. This phrase suggests that the brochure is on safe handling practices in general, with which many people are already familiar.
  - ✓ Add the at-risk populations to the title, so those people will be more likely to read it.
  - ✓ Use a title that has a "warning" tone (e.g., "Listeria: The Deadly Bacteria," "Dangers of Listeriosis," "Listeriosis and the Pregnant Woman: You are at Risk," or "Listeriosis...Is it Harmful to You?").
- ***Develop a brochure specific to each high-risk population.*** Participants said that they would be more likely to read a brochure that was specifically targeted to pregnant women. Participants said that they seek out information on prenatal care during their pregnancy.
- ***Add more information on listeriosis to the brochure, but do not make it too long.*** Participants wanted to know more about the illness (e.g., how to test

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for it, the number of illnesses and deaths attributed to fetuses and newborns, and if it is transmitted through breastmilk).

- **Clarify how *Lm* contamination occurs.** Several participants were confused by the statement in the first paragraph that *Lm* is “often found in soil and water.” Participants suggested stating early in the brochure that one gets listeriosis from eating certain foods.
- **Present the statistics on the mortality rate for listeriosis in simpler terms.** For example, say “1 in 4 die” from listeriosis instead of “25 percent die.”
- **Provide more information on the reheating guidelines for hot dogs and luncheon meats.** Although most participants understood what it means to “reheat until steaming hot,” they questioned how one should do this. Participants wanted to know if you could reheat luncheon meats by holding them under hot running water, and if it was safe to reheat luncheon meats then let them cool in the refrigerator before eating.
- **Emphasize that hot dogs and luncheon meats should not be eaten if they are not reheated.** Some participants did not think it was sufficiently emphasized that those at risk should not eat hot dogs or luncheon meats without reheating them.
- **Drop the section on recalls.** Participants said that they know not to eat recalled products.

Participants in two focus groups evaluated the video news release (VNR), “Preventing Illness from *Listeria Monocytogenes*,” developed by FSIS.<sup>9</sup> This 2-minute VNR

<sup>9</sup>The original study design specified that four groups would evaluate the brochure and four

identifies the populations at risk for listeriosis and provides guidelines for at-risk populations. Participants liked the VNR and said that it would be useful for generating awareness of listeriosis. Participants suggested that the VNR provide more information on the bacterium (*Lm*) itself (what it is, where it comes from, and how it gets into food), and more information on the illness (statistics on the number of illnesses and deaths attributed to *Lm* and the effects of listeriosis on the fetus and mother).

At the end of the discussion, we asked participants if they plan to make any changes based on what they learned in the focus group discussion. Some participants said that they plan to make changes, while others do not.

- Some participants said that they would start reheating or stop eating luncheon meats during their pregnancy. In two of the college-educated groups, most of the participants enthusiastically agreed that they plan to follow the recommended guidelines.
- Some participants said that they would likely eat luncheon meats less often during their pregnancy. Participants did not think heated luncheon meats would be very appetizing.
- Several participants were not inclined to start reheating or stop eating luncheon meats during their pregnancy. These participants said that they would be more likely to follow the recommended guidelines if their doctor discussed this

groups would evaluate the VNR. After evaluating the VNR in two groups, we revised the study design and evaluated only the brochure in the remainder of the groups. FSIS decided that evaluating the VNR in two groups would be sufficient and wanted to get more feedback on the brochure.

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information with them on a one-on-one basis.

### ***Delivery Mechanisms for Listeriosis Educational Materials***

Participants agreed that it is important for pregnant women to be educated about the risk of listeriosis. Participants' suggestions on how to inform pregnant women about listeriosis are summarized below.

#### ***Participants agreed that the best way to inform pregnant women about listeriosis is through obstetricians.***

- Most participants suggested including a brochure on listeriosis in the package of information received at the first prenatal care visit. One participant said, "Every pregnant woman needs to get this brochure at her first visit." Participants said that they read everything included in the prenatal information package even though it may contain numerous brochures.
- Additionally, some participants suggested that obstetricians personally give the brochure to patients and discuss it with them. These participants said that the seriousness of the illness demanded special attention by the doctor. One participant stated, "I think it's the doctor's responsibility to say something because it is such a risk, specifically for pregnant women."

#### ***Participants also suggested disseminating information on listeriosis to pregnant women through books, magazines, and web sites on prenatal care.***

Most participants said that they read books and magazines on prenatal care during their pregnancy. Some participants also get information on prenatal care from the

Internet. Some participants said that they get more prenatal care information from books and other sources than from their doctors.

Table 2 identifies participants' favorite books, magazines, and web sites for prenatal care information. The most popular prenatal book is *What to Expect When You're Expecting*. Referred to as, "the Bible for first-time mothers," this book is distributed by some doctors and insurance companies.

#### **Table 2. Most Popular Books, Magazines, and Web Sites on Prenatal Care**

##### ***Books***

*What to Expect When You're Expecting*  
Arlene Eisenberg, Heidi E. Murkoff, Sandee E. Hathaway, BSN. Workman Publishing, New York, NY, 1996.

*While Waiting*  
George E. Verrilli, MD, FACOG, Anne Marie Mueser, Ed.D. St. Martin's Griffin, New York, NY, 1998.

*Your Pregnancy: Week by Week*  
Glade B. Curtis, MD, OB/GYN.  
Fisher Books, Tucson, AZ, 1997.

##### ***Magazines***

*American Baby*, Primedia, Inc.

*Parenting*, The Parenting Group, Inc.

*Parents*, G&J USA Publishing

##### ***Web Sites***

<http://www.babycenter.com/>

<http://www.pregnancyweekly.com/>

<http://www.pregnancycalendar.com/>

Other approaches for delivering information on listeriosis to pregnant women include the following:

- Display brochures in doctors' offices (obstetricians/gynecologists,

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pediatricians, and general family practice); daycares; and grocery stores.

- Display posters in obstetricians' and pediatricians' offices.
- Include information on listeriosis with prenatal nutritional information.
- Provide information on listeriosis in prenatal care classes.
- Develop a video on food safety and listeriosis that obstetricians can show in their waiting rooms.
- Disseminate information through WIC clinics.

***Participants were divided as to whether displaying warning statements on packaging for hot dogs and luncheon meats would be effective.***

Some participants said that it was appropriate to display warning messages on product packaging given the seriousness of the illness, although some wondered if people would actually notice warning messages. Some participants did not think warning messages are necessary and suggested that it would be more effective to increase general awareness of *Lm*.

***Participants identified the need to increase awareness of *Lm* and listeriosis among the general population through the media.***

Participants were very surprised that they had not heard of *Lm* prior to the discussion. Participants said that people need to become aware of *Lm* just like they are aware of *E. coli* and *Salmonella*. Participants thought media coverage would be effective in getting consumers' attention and increasing awareness of *Lm*. One participant stated, "If I see it on TV ... then it sticks in my mind better than if I just quickly read over a brochure on it."

Participants suggested the following approaches for delivering information on listeriosis to the general population:

- television news
- television news shows (e.g., *Dateline, 20/20*)
- commercials and public service announcements (PSAs)
- newspapers
- cooking shows
- billboards
- schools

## Recommendations

Recommendations based on the focus group findings are summarized below.

***Educate pregnant women on steps they and people who prepare food for them can take to prevent listeriosis.***

Nearly all participants were not aware that pregnant women and other high-risk groups should reheat luncheon meats. We recommend that USDA educate pregnant women and those who prepare food for them on the guidelines for preparing hot dogs and luncheon meats, the USDA recommended storage times for these products, and to not eat foods that have a greater risk of containing *Lm* as specified in the Listeria Action Plan recently released by FSIS and the FDA. Recommended delivery mechanisms for these messages are identified below.

***Revise the brochure and target it specifically to pregnant women.***

Participants suggested developing a brochure targeted to each high-risk population. Participants also suggested

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changes to improve the brochure. We recommend that FSIS develop a brochure for pregnant women incorporating the following changes:

- Emphasize the risk of listeriosis to pregnant women and fetuses (include statistics and discuss the possible outcomes).
- Change the title (drop “Food Safety Tips,” use a title with a warning tone).
- Add more information on listeriosis, but do not make the brochure too long.
- Clarify how *Lm* contamination occurs.
- Provide more information on the reheating guidelines for hot dogs and luncheon meats.
- Emphasize the message, “If you can’t reheat it, don’t eat it” for hot dogs and luncheon meats.
- Provide information on USDA recommended storage times.

### ***Educate obstetricians so they can inform their patients.***

Participants agreed that the best way to inform pregnant women about *Lm* and listeriosis is through obstetricians. Participants suggested including a brochure on listeriosis in the package of information provided at the first prenatal visit. Some participants suggested going a step further and having physicians give the brochure to their patients and discuss it with them.

Research with physicians suggests that it may be difficult to encourage obstetricians to provide their patients with information on listeriosis. Focus group research sponsored by the International Food Information Council found that physicians who treat patients at high risk for foodborne illness do not provide them with preventative

information on food safety.<sup>10</sup> They believe that foodborne illness is less important than other topics, such as heart health, smoking, and drug/alcohol use.

We recommend that FSIS work with the American Medical Association (AMA) and the American College of Obstetricians and Gynecologists (ACOG) to educate obstetricians so they can inform their patients. An important first step toward educating physicians is the document, “Diagnosis and Management of Foodborne Illnesses: A Primer for Physicians.”<sup>11</sup> The primer was developed in response to AMA member requests for guidance on foodborne illness. The primer includes a patient scenario on *Lm*. The AMA is distributing copies of the publication on request and it is also accessible through the AMA’s web site.

### ***Disseminate information on Lm to pregnant women using prenatal care information sources.***

Participants said that they seek out information on prenatal care during their pregnancy. Participants rely on books, magazines, and the Internet for prenatal care information. Although some sources discuss food safety during pregnancy (e.g., do not eat soft cheeses), they do not include preparation guidelines for hot dogs and luncheon meats. We recommend that FSIS work with the prenatal care information

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<sup>10</sup>“Physicians’ Attitudes Toward Food Safety Education.” September 2000. Final report prepared for International Food Information Council. Prepared by Axiom Research Company.

<sup>11</sup>“Diagnosis and Management of Foodborne Illnesses: A Primer for Physicians.” January 2001. Produced collaboratively by the AMA, the Centers for Disease Control and Prevention, FDA, and FSIS. <<http://www.ama-assn.org/foodborne>>.

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sources identified in Table 2 to inform them about *Lm* and encourage them to report on *Lm* when discussing food safety.

### ***Increase awareness of *Lm* in the general population via the media.***

Participants were surprised that they were unaware of *Lm* and listeriosis given the seriousness of the illness. Participants said that for at-risk individuals to make behavior changes, awareness of *Lm* needs to be increased in the general population. Participants likened it to *E. coli* and how most consumers now know not to eat rare meat. Participants discussed the need to increase awareness of *Lm* via the media. Possible approaches for delivering information on *Lm* to the general population were identified in the Results section. Further analysis is required to determine which approaches would be most cost-effective.

### ***Educate the general population on USDA recommended storage times for foods.***

Findings from the Pre-Discussion Survey indicate that many participants do not observe the USDA recommended storage times for some products. Also, some participants refer to expiration dates after opening the package, which could potentially be an unsafe practice. Because *Lm* can grow at refrigerated temperatures, we recommend that FSIS educate consumers on the recommended storage times for meat and poultry products in future education efforts.