

Multistate Outbreak of Listeriosis

by Peter C. Iwen, M.S.

Since early August 1998, approximately 82 illnesses caused by a single strain of *Listeria monocytogenes* have been reported to the Centers for Disease Control and Prevention by 19 states. However, strains of this isolate have been confirmed in Nebraska. A total of 17 deaths have been reported; 12 adults and 5 miscarriages/stillbirths. The CDC and state and local health departments have identified the vehicle for transmission as hot dogs and possibly deli meats produced under many brand names by one manufacturer. On December 22, the manufacturer voluntarily recalled specific production lots of hot dogs and deli meats that might be contaminated. All *L. monocytogenes* isolates from these cases were serotype 4b and share an unusual pattern when serotyped by pulse field gel electrophoresis or by ribotyping methods. Historically the pattern is rare among *L. monocytogenes* isolated from humans.

Listeria monocytogenes is found in soil and water and can contaminate a variety of raw foods, such as uncooked meats and vegetables, as well as foods that become contaminated after processing, such as soft cheeses and cold cuts. Consumption of food contaminated with *L. monocytogenes* can cause listeriosis, an uncommon but potentially fatal disease. This disease affects primarily pregnant women, newborns, and adults with weakened immune systems. Since 1989, the Food Safety and Inspection Service of the United States Department of Agriculture has had a zero tolerance for *L. monocytogenes* in ready-to-eat products such as hot dogs and luncheon meats and conducts a monitoring program within plants to test for the pathogen. The following product categories are included in the monitoring program: (1) beef jerky, (2) roast beef, cooked beef, and cooked corned beef, (3) sliced ham and luncheon meat, (4) small-diameter

sausage, (5) large diameter sausage, (6) cooked, uncured poultry, (7) salads and spreads, and (8) dry and semi-dry fermented sausage. In calendar year 1998, approximately 2.5% of ready-to-eat products analyzed through this monitoring program tested positive for *L. monocytogenes*.

Listeria monocytogenes is readily isolated from normally sterile body sites such as blood, cerebrospinal fluid, amniotic fluid, or fetal tissue. After collection, specimens should be transported to the laboratory as soon as possible or stored at 4°C prior to testing. If a food source is suspected, food samples should be collected aseptically in sterile containers. Whenever possible, foods packaged in original containers should be submitted. Ice cream and other frozen products are best transported in the frozen state in the original container.

Most clinical laboratories are equipped to isolate and identify *Z. monocytogenes* from clinical specimens. However, the isolation of the organism from food requires special media for selective enrichment which is generally not available in most laboratories. If a food source is suspected, Dr. Tom Safranek, the Nebraska State Epidemiologist should be contacted to determine if the sample warrants testing. If testing is recommended, he will instruct where to send the specimen for evaluation. Isolates of *L. monocytogenes* for epidemiological investigations are submitted to the NPHL. Submit these isolates on a nonselective media such as Trypticase soy agar. The "Special Microbiology Requisition Form" should be filled out and accompany all isolates submitted. To receive a copy of this form by FAX, or to request more information concerning the submission of microorganism to the NPHL, contact Peter Iwen at (402) 559-7774.

Reference

1. CDC. Multistate outbreak of listeriosis-United States, 1998. *MMWR* 1998; 47 :1117-1118

**Incidence* of Selected Pathogens by Year;
FoodNet,† 1996-1997*****

Organism	1996	1997
<i>Campylobacter</i>	23.5	24.7
<i>Escherichia coli</i> O157:H7	2.7	2.1
<i>Listeria</i>	0.5	0.5
<i>Salmonella</i>	14.5	13.7
<i>Shigella</i>	8.9	7.9
<i>Vibrio</i>	0.1	0.3
<i>Yersinia</i>	1.0	0.9
<i>Cryptosporidium</i>	Not reported	2.8
<i>Cyclospora</i>	Not reported	0.3
Overall	51.2	50.1****

†CDC, Incidence of foodborne illness—FoodNet, 1997.
MMWR 1998; 37: 782-85

* Per 100,000 Population

†In 1996, laboratory confirmed cases of *Campylobacter*, *Escherichia coli* O157:H7, *Listeria*, *Salmonella*, *Shigella*, *Vibrio*, and *Yersinia* infections were identified in Minnesota, Oregon, and two counties in California, three in Connecticut, and eight in Georgia (expanding to 20 in 1997.) In 1997, surveillance for laboratory-confirmed cases of *Cryptosporidium* and *Cyclospora* infections was added state wide in Minnesota and Connecticut and in eight counties (including the two counties with bacterial surveillance) in California.

***The Foodborne Diseases Active Surveillance Network (FoodNet), the primary foodborne diseases component of CDC's Emerging Infections Program, was developed to better characterize, understand, and respond to foodborne illnesses in the United States.

****Excludes *Cryptosporidium* and *Cyclospora*.