Multistate Outbreak of Listeriosis—United States, 2000

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Since May 2000, 29 illnesses caused by a strain of Listeria monocytogenes (LM) have been identified in 10 states: New York (15 cases); Georgia (three); Connecticut, Ohio, and Michigan (two each); and California, Pennsylvania, Tennessee, Utah, and Wisconsin (one each). Dates of LM isolation ranged from May 17 through November 26 with 26 (90%) infections occurring since July 15. When subtyped, the LM isolates from these cases were indistinguishable by pulsed-field gel electrophoresis (PulseNet pattern numbers GX6A16.0014 by Asc1 and GX6A12.0017 by Apa1) and ribotyping (DUP-1053). This report summarizes the investigation, which linked these cases of listeriosis to eating deli turkey meat.

Eight perinatal and 21 nonperinatal cases were reported. Among the 21 nonperinatal case-patients, the median age was 65 years (range: 29-92 years); 13 (62%) were female. The 29 cases have been associated with four deaths and three miscarriages/stillbirths.

A case-control study conducted by five state and two local health departments and CDC implicated eating deli turkey meat as the probable source of infection. Thirteen (76%) of 17 case-patients and five (21%) of 24 controls ate deli turkey meat during the 30 days before illness onset (Mantel-Haenszel weighted odds ratio = 8.0; 95% confidence interval = 1.2-43.3). State health and agriculture departments investigated 13 stores and delicatessens where 11 patients reported purchasing turkey; these stores and delicatessens carried turkey meat produced by at least 27 federally inspected establishments. Two establishments were linked to 10 of 11 patients; one of these establishments produced turkey meat for the second establishment.

On December 8, investigators from the Food Safety and Inspection Service, U.S. Department of Agriculture (USDA) began investigating the implicated establishments. On December 12, Cargill Turkey Products, Inc. (Waco, Texas) stopped shipping ready-to-eat foods and, on December 14, voluntarily recalled processed turkey and chicken deli meat that might have been contaminated.


CDC Editorial Note: LM infection causes an estimated 2500 serious illnesses and 300 deaths in the United States each year. Infected pregnant women may experience only a mild, influenza-like illness; however, infections during pregnancy can lead to premature delivery, miscarriage, stillbirth, or serious infection of the newborn. Other persons at increased risk for infection are those aged ≥65 years, persons with cancer, diabetes, kidney disease, acquired immunodeficiency syndrome, or who take immunosuppressive medications. Manifestations of illness include meningitis and sepsis. Healthy persons aged <65 years rarely are affected.

The risk for a person developing Listeria infection after eating a contaminated product is very small. Persons who have eaten a recalled product but do not have symptoms do not require tests or treatment even if they are in a high-risk group. However, persons in a high-risk group who have eaten contaminated product and become ill within 2 months with fever or signs of serious illness should consult a physician.

Guidelines for preventing listeriosis are similar to those for preventing other foodborne illnesses. The general recommendations are (1) cook thoroughly raw food from animal sources (e.g., beef, pork, or poultry); (2) wash raw vegetables thoroughly before eating; (3) keep uncooked meats separate from vegetables and from cooked foods and ready-to-eat foods; (4) avoid raw unpasteurized milk or foods made from raw milk; and (5) wash hands, knives, and cutting boards after each handling of uncooked foods. Persons at high risk for listeriosis may choose to (1) avoid soft cheeses (i.e., feta, Brie, Camembert, blue-veined, and Mexican-style cheese such as queso fresco); hard cheeses, processed cheeses, cream cheese, cottage cheese, or yogurt should not be avoided; (2) cook leftover foods or ready-to-eat foods (e.g., hot dogs) until steaming hot; and (3) avoid foods from deli counters (e.g., prepared salads, meats, and cheeses) or thoroughly reheat cold cuts before eating.

Cases of listeriosis with onset since October 1, 2000, should be reported to state and local health departments; information about the recall is available at http://www.fsis.usda.gov/OA/recalls/rec_actv.htm. Consumers who have recalled meat products, even if they have been stored in freezers, should discard or return them to the point of purchase. High-risk consumers who have processed turkey or chicken deli meat but are uncertain of the brand should call the place of purchase to find out if it might be a recalled product, or discard...
NHANES data collected in 1999 and laboratories. This report summarizes data from public and private clinical laboratories on the basis of blood lead tests. It reports state blood lead surveillance programs on the basis of blood lead tests for children aged <6 years from state surveillance data provided to CDC by 19 state surveillance programs during 1996-1998. The findings indicate that, despite the decreases in mean BLL among children, the problem remains concentrated on a local level. Surveillance efforts should be used to target screening efforts to communities at highest risk.

NHANES is a continuous survey of the health and nutritional status of the U.S. civilian, noninstitutionalized population designed so that each year of data constitutes a nationally representative sample. Data in this report are from NHANES 1999, and NHANES III, Phase 2. A household interview and a physical examination were conducted for each survey participant. During the physical examination, blood was collected by venipuncture for all persons aged >1 year.

Graphite furnace atomic absorption spectrophotometry was used to measure BLLs with detection limits of 0.3 µg/dL (NHANES 1999) and 1.0 µg/dL (NHANES III, Phase 2). Long-term quality-control data for these analyses, including similar standardized reference materials, were used in both surveys and showed that data from the two surveys can be compared. Because of limited sample size, NHANES 1999 analyses include only data on average BLLs and selected percentiles but not on the prevalence of elevated levels.

The analyses of CBLs data were based on reports from 19 of 28 states that provided blood lead data to CDC. The 19 states were included because they received all blood lead test results of children from participating laboratories (regardless of level) and reported data from January 1, 1996 through December 31, 1998. These states accounted for 33% of all U.S. children aged <6 years.

An elevated BLL from CBLS is defined as a single blood lead test result ≥10 µg/dL. If multiple tests were reported for a child during a calendar year, the highest BLL measured for that child was used. To estimate the proportion of children with elevated BLLs among those tested, the number of children with elevated levels was divided by the number of children tested at least once during a calendar year.

From NHANES III, Phase 2 (1991-1994) to NHANES 1999, the geometric mean BLL in children aged 1-5 years decreased from 2.7 (95% confidence interval [CI]=2.6-2.9) to 2.0 µg/dL (95% CI=1.7-2.3), and the 50th percentile decreased from 2.6 (95% CI=2.4-2.8) to 1.9 µg/dL (95% CI=1.6-2.1). The continued pattern of decline in BLLs between the two surveys also is indicated at the 10th, 25th, 75th, and 90th percentiles.

The CBLs data showed that the proportion of children tested with BLLs ≥10 µg/dL decreased from 10.5% in 1996 to 7.6% in 1998 in the 19 states providing data. The proportions of children with BLLs ≥15 µg/dL and ≥20 µg/dL also decreased.

The percentage of children aged <6 years tested with BLLs ≥10 µg/dL in each state ranged from 2.7 to 14.9. Within states, the proportion of children with elevated BLLs in counties with at least 200 children tested also varied considerably. For example, the proportion of children with elevated BLLs ranged from 1.3% to 27.3% in counties in Ohio. Across all 19 states, the county-specific proportions of children with elevated BLLs ranged from 0.5% to 27.3% indicating a concentrated proportion of elevated BLLs in specific populations or geographic areas.


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Respiratory Syncytial Virus Activity—United States, 1999–2000 Season

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RESPIRATORY SYNCYTIAL VIRUS (RSV) IS THE LEADING CAUSE OF LOWER RESPIRATORY TRACT ILLNESS (LRTI) AMONG INFANTS AND CHILDREN WORLDWIDE AND IS AN IMPORTANT CAUSE OF LRTI AMONG OLDER CHILDREN AND ADULTS. DESPITE THE PRESENCE OF MATERNAL ANTIBODIES, MOST HOSPITALIZATIONS OCCUR AMONG INFANTS AGED <6 MONTHS, AND NEARLY ALL CHILDREN ARE INFECTED BY AGE 2 YEARS. ALTHOUGH PRIMARY INFECTION IS USUALLY THE MOST SEVERE, REINFECTIVE THROUGHOUT LIFE IS COMMON. IN TEMPERATE CLIMATES, RSV INFECTIONS OCCUR PREDOMINANTLY DURING ANNUAL OUTBREAKS, WHICH PEAK DURING WINTER MONTHS. IN THE UNITED STATES, RSV ACTIVITY IS MONITORED BY THE NATIONAL RESPIRATORY AND ENTERIC VIRUS SURVEILLANCE SYSTEM (NREVSS), A VOLUNTARY, LABORATORY-BASED SYSTEM. THIS REPORT SUMMARIZES TRENDS IN RSV ACTIVITY REPORTED TO NREVSS FROM JULY 1999 THROUGH JUNE 2000 AND PRESENTS PRELIMINARY SURVEILLANCE DATA FROM JULY 8 THROUGH NOVEMBER 21, 2000, WHICH INDICATE THAT RSV COMMUNITY OUTBREAKS ARE BECOMING WIDESPREAD.

Clinical and public health laboratories report weekly to CDC the number of specimens tested for RSV by antigen detection or virus isolation methods and the number of positive results. RSV activity is considered widespread by NREVSS when (1) >50% of participating laboratories report one or more RSV detections for at least 2 consecutive weeks, and (2) >10% of all specimens tested for RSV during a surveillance week are positive. Of the laboratories reporting data for the week ending November 4, 2000, 32 (53%) detected >10% of specimens positive for RSV for at least 2 consecutive weeks, indicating the onset of

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CDC Editorial Note: The findings in this report indicate that average BLLs of U.S. children aged 1-5 years have declined from the early 1990s to 1999. Because of the limited sample size of a single year of NHANES 1999 compared with that of the multiple years of NHANES III, additional data are necessary to confirm this trend. The dramatic decline in BLLs from the late 1970s through the early 1990s resulted primarily from the phase-out of leaded gasoline and the resulting decrease in lead emissions, although other exposures also decreased. Although air lead levels and lead emissions continued to decline during the 1990s, most of this decline occurred before 1995. The primary remaining sources of childhood lead exposure are deteriorated leaded paint and the soil and dust it contaminates in old housing. The construction of new housing and the demolition and rehabilitation of older housing may be contributing to a continued decline in BLLs. Data from NHANES III, Phase 2 showed that low-income children living in older housing had more than a 30-fold greater prevalence of BLLs ≥10 μg/dL than do middle-income children in newer housing. From 1993 to 1997, the number of low-income children living in pre-1940s and 1940-1974 housing declined by 31% and 14%, respectively. The number of low-income children living in post-1974 housing increased by 5%. Despite the overall decline in average BLLs, CBLS data show that the risk for elevated BLLs in children tested remains high in some counties and varies greatly among and within states. This variation most likely reflects geographic variation in the prevalence of risk factors for elevated BLLs such as residence in older housing and poverty.

The findings in this report are subject to at least four limitations. First, the small NHANES 1999 sample does not permit observing risks in specific subgroups or geographic areas, but it provides a nationally representative estimate of BLLs in children. The CBLS data set provides local information but is limited to children who receive clinical or diagnostic blood lead testing. Second, because CDC guidelines recommend the use of blood lead data and census data to target screening efforts in populations at increased risk for lead exposure, the proportion of children with elevated BLLs is higher in CBLS data than would be expected in NHANES 1999. Third, the guidelines for testing children vary by state, and adherence to the guidelines varies by health-care provider. Finally, CBLS data include samples collected by fingerstick, which can slightly over-estimate the blood lead result, and venous samples and results obtained by different laboratories. Despite these differences, the temporal trends in BLLs are similar between the CBLS and NHANES data sets.

One of the national health objectives for 2010 is the elimination of childhood lead poisoning. Data in this report document continued progress toward this goal but also show the ongoing need to target prevention efforts at communities and populations at highest risk. CDC recommends that state health agencies target screening efforts by using blood lead surveillance data, census data, Medicaid data, and other sources of information on risk factors such as housing age and poverty. Other federal agencies, including the U.S. Department of Housing and Urban Development and the U.S. Environmental Protection Agency, also are implementing targeted strategies to prevent lead exposure. State blood lead surveillance systems play a key role in targeting and monitoring federal, state, and local prevention efforts. CDC encourages additional states to conduct surveillance for elevated BLLs in children.

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widespread RSV activity for the 2000-01 season.

From July 1999 through June 2000, 72 laboratories in 45 states reported 123,769 tests for RSV; 18,981 (15%) were positive for RSV. In the United States, widespread RSV activity began during the week of October 30, 1999, and continued for 26 weeks, until the week of March 25, 2000. The timing of the onsets and conclusions of RSV regional outbreaks varied by state: range at onset was September 18 to January 29 and range at conclusions was January 29 to May 6. Regional RSV outbreaks occurred earliest in the South (23 sites; median weeks of onset and conclusion: October 16 and March 11, respectively), later in the Northeast (10 sites; November 27 and April 15), and latest in the Midwest (11 sites; December 28 and April 1) and West (12 sites; November 13 and April 8).*

Although 92% of positive tests were reported for the week ending October 30 through the week ending March 25, RSV was detected throughout the year. For example, during July-August 1999, sporadic RSV isolates were reported from laboratories in California, Colorado, Florida, Hawaii, Louisiana, Texas, Virginia, and Washington.

For the July 1999–June 2000 surveillance period, the number of specimens that tested positive for RSV, average months of peak activity, and regional trends were similar to trends observed during previous years. The duration of the 1999-2000 RSV season also was consistent with that of previous years, including the typical earlier onset of RSV outbreaks reported by southern laboratories.

Reported by: National Respiratory and Enteric Virus Surveillance System collaborating laboratories. Respiratory and Enteric Viruses Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases, CDC.

CDC Editorial Note: Severe manifestations of RSV infection (e.g., pneumonia and bronchiolitis) most commonly occur among infants aged 2-6 months, and hospitalization rates for these diagnoses have been used as an indicator for severe RSV disease among young children. In the United States, bronchiolitis hospitalization rates among children aged <1 year were 31.2 per 1000 in 1996 and were 61.8 per 1000 children aged <1 year among American Indian/Alaska Native children receiving care through the Indian Health Service.7

NREVSS consists of 84 widely distributed laboratories and permits characterization of geographic and temporal trends of RSV infections in the United States. NREVSS data can alert public health officials and physicians to the timing of seasonal RSV activity. Although no RSV vaccine is available, RSV immune globulin intravenous and a humanized murine anti-RSV monoclonal antibody are recommended as prophylaxis for some high risk infants and young children (e.g., those born prematurely or with chronic lung disease) to prevent serious RSV disease.6 Nosocomial transmission of RSV can be controlled by using contact isolation procedures.

The findings in this report are subject to at least three limitations. First, laboratory data serve as an indicator of when RSV is circulating in a community; however, the correlation of these data to disease burden in the population is uncertain. Second, some regions are represented by few laboratories. Finally, the results may not be confirmed in some laboratories.

Symptomatic RSV disease can recur throughout life because of limited protective immunity induced by natural infection. As a result, healthcare providers should consider RSV as a cause of acute respiratory disease in children and adults during community outbreaks. Persons with underlying cardiac or pulmonary disease or compromised immune systems and the elderly are at increased risk for serious complications of RSV infection, such as pneumonia and death.8 RSV infection among recipients of bone marrow transplants has resulted in high mortality rates (83%).10 Additional information and updated data on RSV trends are available on the CDC WorldWide Web site at http://www.cdc.gov/nicddod/dvrd/nrevss.

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