

# CONNECTICUT EPIDEMIOLOGIST

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Stephen A. Harriman, Commissioner

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## THIS ISSUE

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The Connecticut Emerging Infections Program (EIP) Foodborne Diseases Active Surveillance Network (FoodNet) is one of seven sites working collaboratively with the Centers for Disease Control and Prevention (CDC), the United States Department of Agriculture (USDA), and the Food and Drug Administration (FDA).<sup>1</sup> The objectives of FoodNet are to describe the epidemiology of emerging foodborne pathogens, estimate the frequency and severity of foodborne diseases that occur in the United States each year, and determine the proportion of specific foodborne diseases associated with certain contaminated foods. Data from this project will be used to assist in the evaluation of new food safety programs and regulations.

This report summarizes results of Connecticut FoodNet activities during 1996 for Hartford and New Haven counties and presents findings of a physician survey regarding stool culturing practices. Results of a 1995 laboratory survey, which determined the extent to which laboratories examine stool specimens for bacterial pathogens, is also presented.

### Active Laboratory Surveillance

In January 1996, active laboratory surveillance for seven potential foodborne pathogens (*Campylobacter* spp., *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella* spp., *Shigella* spp., *Vibrio* spp., and *Yersinia enterocolitica*) was initiated in 25 clinical microbiology laboratories that serve residents from Hartford and New Haven counties.

During 1996, 730 culture-confirmed cases were identified among the 1.6 million residents of these two counties. Incidence was highest for salmonellosis (17 per 100,000 population), followed by campylobacteriosis (16), shigellosis (6), *E. coli* O157:H7 infection (2), *Yersinia* infection (1), listeriosis (1) and vibriosis (.06). Incidence rates varied by county with significantly higher rates of *Campylobacter*, *Shigella*, *E. coli* O157:H7 and *Yersinia* reported in residents of New Haven County (Figure 1).

Incidence also varied by age group (Figure 2). The highest rates for salmonellosis and shigellosis occurred among children  $\leq 9$  years of age. Among this age group, rates were 18 times higher in New Haven County (54 per 100,000 population) than in Hartford County (3 per 100,000 population). Rates of campylobacteriosis were highest in persons aged 40-49 years and persons  $\geq 80$  years. Persons  $\leq 9$  years of age and persons aged  $\geq 80$  years had the highest rates of *E. coli* O157 infection.

Of the 730 cases, 158 (22%) involved hospitalization. Hospitalization rates were highest for persons with listeriosis (100%), followed by persons with *E. coli* O157:H7 gastroenteritis (47%), yersiniosis (45%) and salmonellosis (24%). Deaths occurred in seven cases: listeriosis (4), salmonellosis (2), and campylobacteriosis (1).

The distribution of cases showed a marked seasonal variation (Figure 3) with cases of *Campylobacter* and *Salmonella* peaking in the summer months. The bimodal distribution of *E. coli* O157:H7 cases represent two outbreaks that occurred in residents of Hartford and New Haven counties in June and October.<sup>2</sup>

## Physician Survey

In 1996, physicians in non-surgical specialties from Hartford and New Haven counties were randomly surveyed to determine their practices relating to ordering stool cultures for patients who present with diarrhea. Of the 1000 surveys mailed, 569 (57%) were returned after three mailings; 300 (53%) met the criteria for inclusion in the study (i.e., practice in either Hartford or New Haven County, in clinical practice at least 8 hours per week, and having seen a patient with diarrhea in the previous 12 months). Specialities of the 300 respondents included Internal Medicine (160), Family Medicine (22), Emergency Medicine (14), Obstetrics and Gynecology (27), Pediatrics (66), and other (11).

While all physicians had seen a patient with diarrhea in the past 12 months, 79% had seen one in the past month. Of the 300 physicians meeting the inclusion criteria, 129 (43%) ordered a bacterial stool culture for the last patient seen with diarrhea. Physicians who ordered a culture indicated that duration of diarrhea (48%) and bloody diarrhea (9%) were the most important factors influencing this decision.

Sixty-eight percent of the 300 respondents had seen a patient with bloody diarrhea in the past year. Of these, 77% ordered a stool culture on this patient. Only 29% of these physicians specifically requested the laboratory to culture for *E. coli* O157; 45% did not because they believed the laboratory routinely tested for *E. coli* O157.

## Survey of Clinical Laboratories

To assess variations in laboratory stool culturing practices, in October 1995 all clinical microbiology laboratories that perform on-site stool culturing for residents of Hartford and New Haven counties were surveyed. Of the 35 laboratories surveyed, 33 responded.

In August 1995, the mean number of bacterial stool cultures performed by these laboratories was 140 (range 0 - 1300). All 33 laboratories routinely test every stool specimen for *Salmonella* and *Shigella*; 32 (97%) routinely test for *Campylobacter*. Only 50% of the responding laboratories routinely test all stools for *E. coli* O157; nine (35%) test all bloody stools for *E. coli* O157. *Vibrio* and *Yersinia* were routinely tested by 23% and 42% of the laboratories, respectively.

**Editorial Note:** Foodborne disease affects an estimated 6.5 to 81 million persons each year in the United States (U.S.). These figures are based on the sum of data obtained by passive surveillance and investigations of outbreaks and may grossly underestimate the extent of the problem. FoodNet provides a unique opportunity to explore the factors that affect the burden of foodborne illness from a population-based perspective. In Connecticut, FoodNet encompasses 75% of the state's population.

In 1996, active surveillance for bacterial foodborne pathogens revealed some significant differences in incidence rates between Hartford and New Haven counties. For example, *Shigella* infections were six times higher in New Haven County than in Hartford County, especially among children  $\leq$  9 years of age. This difference cannot be attributed to laboratory culturing practices since 100% of laboratories in both counties routinely culture all stool samples for *Shigella* using similar techniques. Additional studies will assist in determining reasons for the differences observed.

Physicians need to specifically request culture for *E. coli* O157 to assure appropriate testing of specimens. Connecticut data show that physicians practicing in Hartford and New Haven counties order stool cultures based on duration of diarrhea and the presence of blood in the stool. Many physicians believed that their laboratories routinely test stool for *E. coli* O157. However, a survey conducted in 1995 indicated that only 50% of laboratories that perform on-site stool culturing for residents of Hartford and New Haven counties routinely test all stools for *E. coli* O157.

In addition to addressing the burden of foodborne disease, FoodNet has also assisted in the early detection of two *E. coli* O157:H7 outbreaks in 1996. The first outbreak, which occurred in early June, was a multistate outbreak which implicated mesclun mix lettuce, a mixture of small leaf lettuces. The mesclun mix was traced to a single out-of-state producer. In Connecticut, 21 outbreak-related cases were identified. The second outbreak, which occurred in October, was associated with drinking fresh-pressed apple cider from one local processor in New Haven County. Twelve outbreak-related cases were identified. Early recognition of this outbreak prompted the removal of the implicated cider from the market and may have prevented additional cases of *E. coli* O157:H7 infection. The findings of both outbreaks are being used in national policy discussions to reduce the threat of foodborne disease.

This early warning system is part of a national food-safety initiative.<sup>3</sup> President Clinton has requested \$43 million for a food safety initiative in 1997 and 1998. States that participate in FoodNet include California, Connecticut, Georgia, Maryland, Minnesota, New York and Oregon. Connecticut is participating in FoodNet through the Connecticut EIP, a collaborative project between the DPH and the Yale University School of Public Health.

In 1997, Connecticut FoodNet activities include:

◆ **Expanded Active Laboratory Surveillance**  
Active laboratory surveillance was expanded to include eight clinical microbiology laboratories which serve residents of Fairfield County. This increased the population under surveillance from 1.6 million to 2.4 million residents and represents 75% of the state's population.

◆ **Active Surveillance for Hemolytic Uremic Syndrome**  
Hemolytic uremic syndrome (HUS) is a life-threatening illness characterized by hemolytic anemia, thrombocytopenia and acute renal failure. In the U.S., most cases of HUS are caused by infection with Shiga toxin-producing *Escherichia coli* (STEC), especially *E. coli* O157:H7.

To enhance detection of HUS cases and to monitor trends in O157 and other STEC infections, the DPH, in collaboration with the CDC, has established a network of pediatric nephrologists who will report pediatric cases (< 18 years old) by telephone as soon as they are diagnosed. Four other EIP sites located in California, Georgia, Minnesota and Oregon are also participating in this surveillance effort.

◆ **Campylobacter Antimicrobial Susceptibility Testing**  
*Campylobacter* is an important foodborne pathogen often acquired from contaminated poultry. Use of fluoroquinolones in poultry in the Netherlands was followed by the emergence of resistance among *Campylobacter* isolates from humans in that country.<sup>4</sup> There are few data on resistance in *Campylobacter* strains isolated from humans in the U.S.

Beginning January 1, 1997, one *Campylobacter* isolate per week will be submitted to the CDC for antimicrobial susceptibility testing.

◆ **Campylobacter Case-Control Study**  
A case-control study to determine risks associated with infection with *Campylobacter* spp. will be initiated in October. A sample of residents with culture confirmed *Campylobacter* infections from Hartford, New Haven, and Fairfield counties and a randomly selected control group of people in the community who did not become sick will be interviewed. The interview will obtain information about illness, health status, foods consumed, and other potential risk factors.

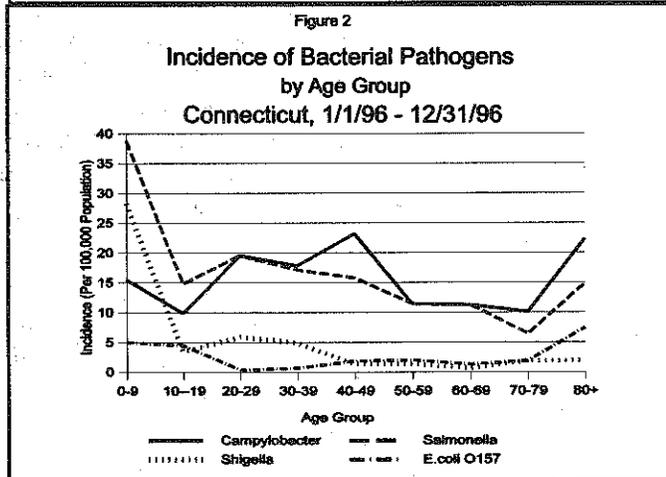
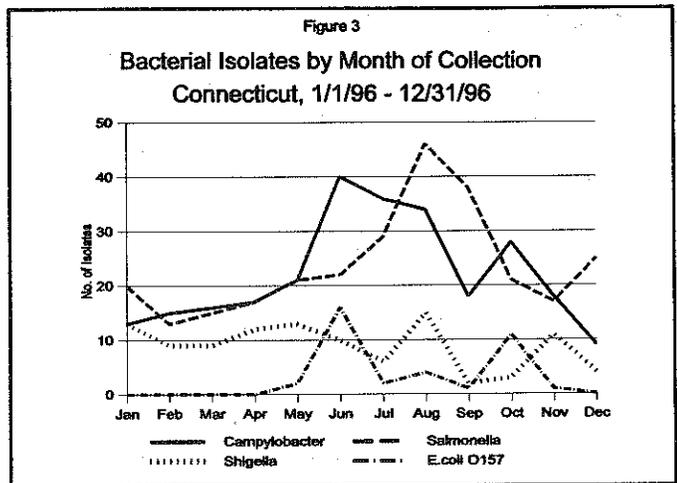
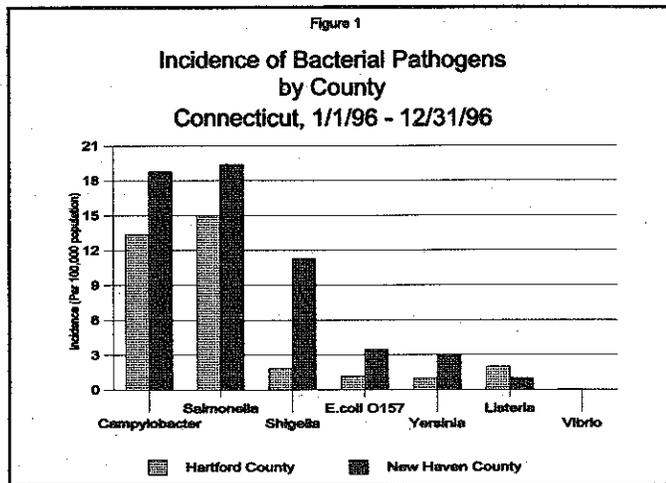
◆ **Pulse-Field Gel Electrophoresis (PFGE) Capabilities at the State Laboratory**  
This molecular method for determining similarity among patterns of DNA fragments will be available at the State Laboratory to identify similar strains of *E. coli* O157 and *Salmonella* Groups B and D. This technique, coupled with a thorough epidemiologic investigation, is valuable in outbreaks when cases are from different geographic areas or occur over a prolonged period.

For more information about the Connecticut FoodNet contact Ruthanne Marcus or Terry Fiorentino at Yale University School of Medicine, Department of Epidemiology and Public Health, (203) 785-2920 or (203) 785-2925 or Patricia Mshar at the DPH, Epidemiology Program, (860) 509-7994.

*References*

1. CDC. Foodborne Diseases Active Surveillance Network, 1996. MMWR 1997;46:258-61.
2. CDC. Outbreaks of *Escherichia coli* O157:H7 infection and cryptosporidiosis associated with drinking unpasteurized apple cider -- Connecticut and New York, October 1996. MMWR 1997;46:4-8.
3. Food safety from farm to table: a national food safety initiative. Report to the President. May 1997.
4. Endtz HP, Ruijs GJ, van Klingeren B, Jansen WH, van der Reyden T, Mouton RP. Quinolone resistance in campylobacter isolated from man and poultry following introduction of fluoroquinolones in veterinary medicine. J Antimicrobial Therapy 1991;27:199-208.

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AFTER 4:30 P.M. AND  
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CALL THE  
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(860) 509-8000



**MOSQUITO TESTING FOR EEE**

Mosquito traps have been placed in 37 locations throughout the state. Trapping will continue throughout the summer. The results of mosquito testing will be made available on a weekly basis through the Department of Environmental Protection's Mosquito Management Trapping & Testing Reporting Form and a 24-hour information line at:

**(860) 424-4184**

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