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State of Connecticut Department of Public Health
Stephen A. Harriman, Commissioner

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INVASIVE BACTERIAL DISEASE

Connecticut is one of four states to receive funding from the Centers for Disease Control and Prevention (CDC) to establish an Emerging Infections Program (EIP). One of the core projects of the EIP is to conduct active, population-based laboratory surveillance for invasive disease caused by *Haemophilus influenzae*, *Neisseria meningitidis*, Groups A and B streptococci, and antibiotic-resistant *Streptococcus pneumoniae*. The following summarizes data from the first 12 months of surveillance.

In January 1995, the annual List of Reportable Disease and Laboratory Findings was modified to include reporting of all diseases needed for this project. The list of reportable findings was also modified to require that all isolates of invasive Group A streptococcal disease, invasive *H. influenzae* disease (all serotypes), and invasive pneumococcal disease be sent to the State Laboratory. It had been previously required that isolates of *N. meningitidis* be sent to the State Laboratory.

In February 1995, microbiologists in all 35 acute care hospital laboratories were contacted by phone. The purpose of the call was to describe the EIP and to solicit their input in developing a protocol that would facilitate reporting. Based on these discussions, a Laboratory Surveillance Form for Invasive Disease was developed. This form is completed by the hospital microbiologist and submitted to the DPH on the first day of each month, even if there have been no invasive isolates. If the report form is not received within 10 days, the hospital microbiologist is contacted by telephone for case information. Additional clinical and demographic information is later obtained from the patient's medical record by EIP staff. When laboratory based surveillance began in March 1995, Connecticut had 35 acute-care hospital laboratories. Since then, hospital mergers have resulted in active laboratory surveillance being done in 33 acute care hospital laboratories.

Chart reviews have been completed on 1,348 (95%) cases of invasive disease that were reported from March 1, 1995 - February 29, 1996. These 1,348 cases include 777 (58%) *S. pneumoniae* infections, 345 (26%) group B streptococcal infections, 123 (9%) group A streptococcal infections, 66 (5%) *H. influenzae* infections, and 37 (3%) *N. meningitidis* infections. The annual rate of invasive disease by age is shown in Table 1.

Pneumococcal Disease

A total of 803 infections were identified among the 777 patients with invasive *S. pneumoniae* infections: 507 (63%) had pneumonia only, 171 (21%) had bacteremia only, 47 (6%) had meningitis only, 25 (3%) had otitis media only, 52 (7%) had a variety of other infections and one (0.1%) patient's type of infection was unknown.

Of the 777 patients, 315 had isolates that were tested only by oxacillin disk screening. Of these 315 isolates, 14 (4%) were determined to be oxacillin resistant. Penicillin susceptibility by the minimum inhibitory concentration (MIC) method was performed on isolates from another 442 patients. Of

these 442 isolates, 96 (22%) were determined to be non-susceptible to penicillin. Forty-two (44%) of the 96 isolates had high level resistance (MIC $\geq$ 2 ug/ml). Isolates for approximately 90% of the cases were received by the State laboratory. These isolates have been sent to a single reference laboratory for antibiotic susceptibility testing. The results will be reported in a subsequent issue.

Group A Streptococcal (GAS) Disease

A total of 153 infections were identified among 123 cases with invasive group A streptococcal infections: 49 (32%) had cellulitis, 22 (14%) had bacteremia, 15 (10%) had Streptococcal Toxic Shock Syndrome (STSS), 10 (8%) had necrotizing fasciitis, 8 (5%) had pneumonia, 6 (4%) had arthritis, 5 (3%) had osteomyelitis, and 2 (1%) had endocarditis. The remaining 36 (25%) had a variety of infections. Sixteen (13%) patients died. Of these 16 deaths, 6 (38%) had bacteremia only, 8 (50%) had STSS either alone or in combination with another type of infection, 1 (6%) had pneumonia, and 1 (6%) had tenosynovitis.

Group B Streptococcal (GBS) Disease

For 345 cases of invasive GBS, 35 (10 %) occurred in those aged 0 - 6 days (early-onset disease), 13 (4 %) occurred in those aged 7-90 days (late-onset disease) , 8 (2 %) occurred in those aged 91 days - 9 years, and 289 (84%) occurred in those aged 10 years or more (including 17 pregnant women). Fatality rates among age groups ranged from 8% to 11%.

Of the 17 pregnant women, 7 were identified because of their own positive blood cultures, 9 were identified through positive GBS cultures from placentas, and 1 had a positive GBS culture from fetal tissue. Of the 17 pregnancies, 4 (24%) infants were not ill, 2 (12%) infants had clinical GBS infection but survived, and 11 (65%) had fetal or neonatal demise.

Meningococcal Disease

Of the 37 *N. meningitidis* infections, 15 (41%) were serogroup C, 14 (38%) were serogroup Y, 4 (11%) were serogroup B, 1 (3%) was serogroup W135, and 3 (8%) had unknown serogroups. Twenty patients (54%) presented with meningitis, 11 (30%) with bacteremia, 3 (8%) with pneumonia, 1 (3%) with pneumonia and pericarditis, 1 (3%) with otitis media, and 1 (3%) with tenosynovitis. Two (5%) patients died.

Table 1: Annual Incidence of Invasive Disease by Age, Connecticut, March 1, 1995 - February 29, 1996

Age Group (years)	*S. pneumoniae*		Grp. A Streptococcus		Grp. B Streptococcus		*N. meningitidis*		*H. influenzae*	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*
0 -4	125	54.7	5	2.2	57	25.0	7	3.1	10	4.4
5 - 9	14	6.7	5	2.4	1	0.5	2	1.0	1	0.5
10 - 19	14	3.4	5	1.2	4	1.0	13	3.2	2	0.5
20 - 29	34	6.3	10	1.9	17	3.2	3	0.6	2	0.4
30 - 39	92	16.4	22	3.9	28	5.5	0	0.0	5	0.9
40 - 49	81	18.2	23	5.2	48	10.8	5	1.1	5	1.1
50 - 69	170	28.7	33	5.6	99	16.7	2	0.3	13	2.2
$\geq$ 70	247	80.8	20	6.5	91	29.8	5	1.6	28	9.2
Totals	**777**	**23.6**	**123**	**3.7**	**345**	**10.5**	**37**	**1.1**	**66**	**2.0**

* Rate per 100,000 population based on 1990 census.

Haemophilus Influenzae Disease

Sixty eight infections were reported for the 66 persons with invasive *H. influenzae* infections: 33 (49%) had pneumonia, 14 (21%) had bacteremia, 3 (4%) had meningitis, 3 (4%) had otitis media, and 14 (21%) had other infections (including 1 with unknown infection). Death occurred in 13 (20%) cases.

Serotyping of 47 available isolates for these 66 cases identified 5 (11%) that were serotype B, 1 (2%) was serotype A, 4 (9%) were serotype E, 4 (9%) were serotype F, and 33 (70%) were non-typeable. None of the serotype B (Hib) cases were identified from children under 5 years of age.

For More Information

For more information about the Surveillance for Invasive Bacterial Diseases Project, contact Nancy L. Barrett or Craig Morin at the Epidemiology Program, DPH, (860) 509-7994.

CYCLOSPORA INFECTION

In May and June 1996, the occurrence of a multistate outbreak of infection with the emerging pathogen *Cyclospora cayetanensis* led to investigations by state and local health departments, the CDC, health officials in Canada, and other organizations [MMWR 1996; 45:611-2]. As of July 26, 1996, 35 cases *Cyclospora* infection have been reported to the Connecticut Department of Public Health (DPH) from the following counties: Fairfield (21), Hartford (3), Litchfield (2), New Haven (4), New London (4), Tolland (1). The cases involved 18 men. The mean age was 56 years (range 32 to 81 years). Of the 31 case-patients interviewed, illness onsets ranged from May 24 to June 16. None of the patients were hospitalized. No common source of infection has been identified, however, 77% of the patients reported having eaten raspberries in the two weeks prior to illness onset. Ingestion of imported raspberries is thought to underlie the multistate outbreak.

To determine the occurrence of *Cyclospora* in Connecticut, DPH requests that: (1) *Cyclospora* be considered in the differential diagnosis of all persons with persistent watery diarrhea and/or abdominal cramping, nausea, anorexia or fatigue; (2) examination for *Cyclospora* be specifically requested when submitting stool for laboratory diagnosis in these cases; and (3) all cases of *Cyclospora* be voluntarily reported to the Epidemiology Program, DPH at (860) 509-7994.

LYME DISEASE

The Connecticut Department of Public Health (DPH) has been conducting surveillance for Lyme disease (LD) since 1984, although the disease did not become officially reportable until July 1987 (Figure 1). Lyme disease case reports that meet the national LD surveillance case definition are counted as cases [MMWR 1990;39(No. RR-13):19-21]. Follow-up questionnaires are sent to physicians who report a case of LD without supplying clinical information. Reports without clinical information are not counted as cases.

Of the 3,128 LD reports received by the DPH in 1995, 1,548 (49%) met the surveillance case definition. Of these 1,083 (70%) were reports of erythema migrans (EM) only and 66 (4%) were reports of EM and a systemic manifestation of LD. Of the 1,979 non-EM reports received, 399 had one or more systemic manifestations and a positive serologic test for antibody to Borrelia burgdorferi and thus met the surveillance case definition. Arthritic symptoms occurred in 301 (75%), neurologic manifestations occurred in 91 (23%), and cardiac complications occurred in 7 (2%). The remaining 1,580 reports contained either insufficient (60%) or no (40%) clinical information (i.e. laboratory reports only).

As in previous years, the majority of cases occurred in the summer months. In 1995, 62% of cases with known onset dates occurred during the months of June and July. The age group with the highest LD rate was children aged 5 through 9 years. In 1995, the incidence rate for this age group was 79 per 100,000 population. The lowest rate occurred in the 20 to 24 year age group (Figure 2).

In 1995, Connecticut had the highest reported rate of LD of any state (47.1 cases per 100,000 population). For the first time, Windham county reported the highest rate of Lyme disease for any county in Connecticut (Figure 3). In the northeastern region of Connecticut, Tolland and Windham Counties, the reported LD case rate has increased steadily since 1990 (Figure 4).

Figure 1

LD Cases, 12-Town Area and Statewide

Connecticut, 1977-1995

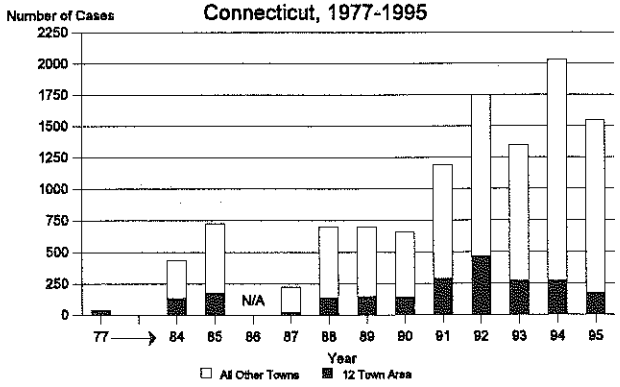


Figure2

Lyme Disease Incidence by Age

Connecticut, 1995

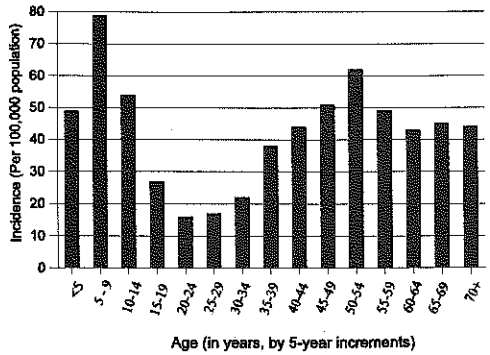
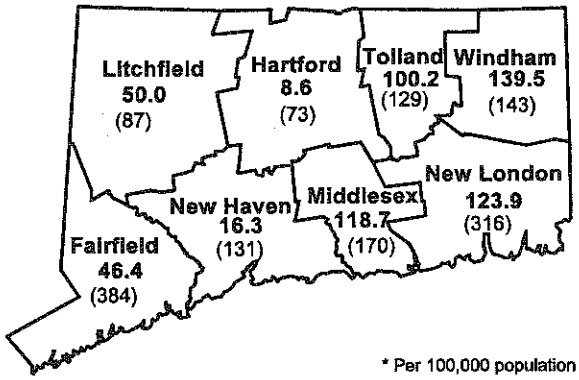


Figure 3

Lyme Disease Rates* (Cases)

Connecticut, 1995

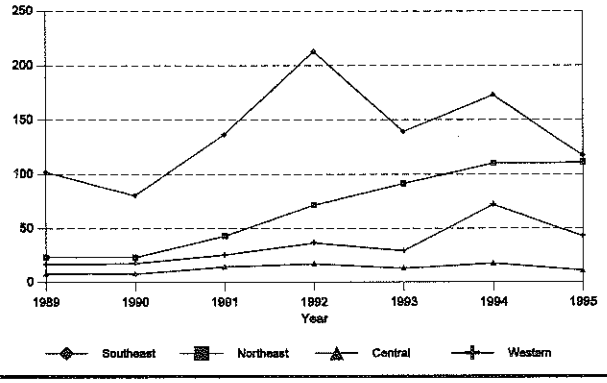


* Per 100,000 population

Figure 4

LD Rates, by Region

Connecticut, 1989 - 1995



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