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INFLUENZA UPDATE

In December 1990, the first cases of influenza were confirmed by the state laboratory. As of January 16, 1991, 36 isolates of influenza type B have been identified. The isolates are similar to the B/Yamagata/16/88 - like strain contained in this year's influenza vaccine.

Nationally, influenza B has predominated during this influenza season, with most reported illnesses occurring in children. The impact that this year's influenza B activity will have on older persons and persons at high risk of serious complications or death is unknown. However, excess mortality has occurred in each of the influenza B epidemics since 1979.

HOSPITALIZATION DUE TO LYME DISEASE

In addition to disease reporting, hospital discharge information is another source of surveillance information on Lyme disease. To evaluate the incidence and health impact of Lyme disease in Connecticut, data on hospital discharges related to Lyme disease for January 1, 1986 through December 31, 1988 were obtained from the Connecticut Health Information Management and Exchange (CHIME), a voluntary statewide data-bank owned and operated by the Connecticut Hospital Association.

In 1986, Lyme disease was assigned an ICD-9 code (088.8). While the hospital discharge data did not contain personal identifiers, it did utilize an identification code to determine multiple discharges on the same patient.

The number of discharges from Connecticut hospitals involving Connecticut residents with the primary diagnosis of Lyme disease increased from 54 in 1986 to 127 in 1988 (Table 1). The 391 discharges with a diagnosis of Lyme disease over a three year period involved 371 different Connecticut residents. Of the 371 residents, 16 were hospitalized twice and two were hospitalized three times for Lyme disease.

TABLE 1: Number of Lyme Disease Discharge Diagnoses Involving Connecticut Residents, by Year and Level of Diagnosis, 1986 - 1988

Year	LEVEL OF DIAGNOSIS		
	Primary	Secondary	Total
1986	54	34	88
1987	66	47	113
1988	127	63	190
TOTAL	247	144	391

Of the 391 discharges, 247 had Lyme disease as the primary discharge diagnosis and 144 as a secondary discharge diagnosis. The 247 primary cases involved 238 Connecticut residents; 117 (49%) were female and 121 (51%) were male.

Ages ranged from 1 to 99 with a mean age of 35. The highest percentage (20.6%) of discharges occurred among residents between the ages of 30 and 39 (Table 2).

The 247 discharges with the primary diagnosis of Lyme disease were reported from 25 of the 36 Connecticut hospitals. While discharges involved persons from every county, the highest percentage (35%) occurred in residents of New London county (Table 3). The length of stay per hospitalization of the 247 cases ranged from 1 day to 36 days with a median of 6 days. A total of 227 (92%) cases had a hospital stay of less than or equal to 14 days. The accumulated hospitalizations of all 247 discharges totaled 1,736 days.

EDITORIAL NOTE:

There are several important limitations to using the Connecticut hospital discharge data. The absence of clinical information makes it impossible to verify how many of the cases each year meet the Lyme Disease surveillance case definition.¹ Furthermore, it is impossible to distinguish between the significance of a primary or secondary diagnosis of Lyme disease. In addition, trends in hospitalization could reflect changing indications for hospitalization rather than changing disease incidence.

Nonetheless, the rising trend in hospitalizations over the 3-year period is consistent with trends observed from case reporting,² as is the geographic distribution of hospitalized cases. The increase in hospitalizations may in large part reflect the increased use of intravenous antibiotics for the treatment Lyme disease.³ The influence of this factor on hospitalizations for Lyme disease may diminish as home and outpatient intravenous therapy becomes more widely used.

Because the CHIME data set does not contain clinical information or personal identifiers, it is not only impossible to determine how many of the Lyme disease discharges meet the surveillance case definition, but it is also impossible to determine how many of the 247 hospitalized cases with a primary discharge diagnosis of Lyme disease were reported to the Department of Health Services.

In a recent study from the New York,⁴ where it is possible to link hospital discharge data and personal identifiers, only 99 (33%) of the 303 patients admitted to New York state hospitals for either primary or secondary diagnosis of Lyme disease in 1987 met the surveillance case definition. Only 34 (33%) of the 99 hospitalized cases that met the CDC surveillance case definition had

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TABLE 2: Number of Connecticut residents with Lyme disease as the primary discharge diagnosis by age, 1986 - 1988			Table 3: Number of Lyme disease primary discharge diagnoses of Connecticut residents by county of residence and year of diagnosis, 1986 - 1988					
Age Group (years)	Total (%)	Annual Rate*	County	1986	1987	1988	Total (%)	Annual Rate*
0-9	30 (12.6)	2.4	Fairfield	7	11	34	52 (21.1)	2.0
10-19	41 (17.2)	3.1	Hartford	9	4	13	26 (10.5)	1.0
20-29	34 (14.3)	2.1	Litchfield	3	1	0	4 (1.6)	.8
30-39	49 (20.6)	3.1	Middlesex	12	13	13	38 (15.4)	9.0
40-49	23 (9.7)	1.9	New Haven	2	8	9	19 (7.7)	.8
50-59	16 (6.7)	1.6	New London	15	23	48	86 (34.8)	11.4
60-69	24 (10.1)	2.5	Tolland	3	1	6	10 (4.0)	2.7
70-79	14 (5.9)	2.2	Windham	0	1	4	5 (2.0)	1.7
≥80	7 (2.9)	2.3	Unknown	3	4	0	7 (2.9)	--
TOTAL	238 (100.0)	2.4	TOTAL	54	66	127	247 (100.0)	2.5

*Age-specific average annual number of persons discharged with a primary diagnosis of Lyme disease per 100,000 population. Based on population estimates for 1987, Connecticut

*Average annual discharges of Lyme disease per 100,000, 1986 - 1988. Based on population estimates for 1987, Connecticut Department of Health Services.

been reported to the state health department. In the surveillance system, 35 cases were reported to have been hospitalized.

The New York Department of Health estimated that there may have been as many as 248 hospitalized Lyme disease cases, reported and unreported, meeting the case definition in 1987. The estimated completeness of surveillance reports for hospitalized Lyme disease was 14% (35/248) and for the hospital discharge system was 40% (99/248).

Hospital discharge information is useful in estimating the impact of Lyme disease on the health care system and as an adjunct to case reporting. Further research is needed on the social and medical costs of this increasingly important public health problem.

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HAEMOPHILUS INFLUENZA TYPE B

Since October 1990, the FDA has approved two conjugated vaccines with high efficacy against *Haemophilus influenzae* type b (Hib) for use in multidose regimens beginning at age 2 months.^{1,2} Previously approved vaccines were approved for use only in children aged 15-18 months and older. To assess the potential benefits of the newly approved Hib vaccines, the Epidemiology Section has reviewed the epidemiology of reported Hib meningitis cases from 1988-1989.

From 1988-89, a total of 98 cases of Hib meningitis were reported in Connecticut. Sixty-two (63%) of these cases were between the ages of 2 and 18 months and 51 (52%) were between 2 and 15 months (Table 1). Thus, more than 50% of current cases are potentially preventable with the newer vaccines. These potentially preventable cases are more likely to reside in urban areas (relative risk compared to non-urban areas = 2.8, Table 2) and to be black (relative risk compared to whites = 3.7).

EDITORIAL NOTE:

Nationally and in Connecticut, Hib is the most common cause of bacterial meningitis, causing an estimated 12,000 cases annually, predominantly in children less than 5 years of age.³ The mortality rate of Hib meningitis is 5%; another 25-35% of affected children suffer permanent neurologic impairment. For every 2 cases of meningitis, 1-2 cases of other forms of serious Hib invasive

TABLE 1. Haemophilus Influenza Type B Disease, age-specific incidence, Connecticut 1988-89				TABLE 2. Haemophilus Influenza Type B Disease, town specific incidence in children aged ≤14 months, Connecticut 1988-89			
Age	No. Cases	% of Total	Annual Incidence *	Town Size	No. Cases	% of Total	Annual Incidence*
< 2 mo.	4	4%	61	≥ 100,000	26	47%	236
2-14 mo.	51	52%	132	≤ 99,999	29	53%	85
15-17 mo.	11	11%	119				
> 18 mo.	32	33%	1				
TOTAL	98	100%	3.2	TOTAL	55	100%	121
*Age-Specific/100,000 population, 1980 census				*Age-Specific/100,000, 1980 census			

disease occur; including sepsis, epiglottitis, cellulitis, septic arthritis, pericarditis, pneumonia and osteomyelitis.

Prior to 1990, only Hib meningitis was reportable in Connecticut. Beginning in January 1990, all forms of Hib invasive disease became reportable.

The high age-specific incidence in Connecticut children less than 18 months old is consistent with the epidemiology of Hib invasive disease from other studies.³ The development of vaccines that are effective in this age group should have a very important public health benefit if high levels of vaccine coverage can be achieved.

This will be a challenge, however, as Hib disease is most common in urban areas where the age-appropriate vaccination status of children has lagged behind the rest of the state.

References

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