

Connecticut Epidemiologist



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Douglas S. Lloyd, M.D., M.P.H., Commissioner

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LYME DISEASE IN CONNECTICUT - PRELIMINARY FINDINGS

In July, 1984, the Epidemiology Section of the State of Connecticut Department of Health Services began a program of surveillance for Lyme Disease. The goals of this effort were to establish incidence and prevalence rates for this disease in Connecticut, to characterize its course more completely and to evaluate the diagnostic value of available serologic tests.

Physicians were asked to complete an extensive case report form on each individual whose sera was submitted for Lyme Disease serology. From June 15 through December 3, 1984, serologic specimens were submitted on 1071 individuals. Of these, case report forms were completed on 804 persons (75%). These 804 completed forms are the basis of the following preliminary data. Further analysis will be completed in the next few months. Seventy-four cases reported without accompanying serology are not included at this time.

Individuals were categorized according to the definitions previously published (1). Of the 804 case records evaluated, 338 individuals met the case definition for a confirmed case (42%), 10 were classified as probable cases (1.2%) and the remaining 456 persons fell into the possible category (56.8%). Fifty-two percent of confirmed cases had at least one positive serology ($\geq 1:128$), while only ten percent of those in the possible category had positive serologies (Table 1).

Incidence rates were calculated for the state, each county and selected towns based upon confirmed cases only (Tables 2 and 3). Cases were assigned by town of residence of the patient.

Because there was no previous statewide reporting, it is impossible to say whether this was an epidemic year. Based on surveillance through serologic testing alone, however, the rates for selected towns around Lyme are strikingly similar to estimates made by Steere in 1975 (2).

Table 1. Lyme Disease Seropositivity by Case Category, Connecticut 1984

Category	Number Cases	Number Seropositive (%)
Confirmed Case	338	176 (52.1)
Probable Case	10	3 (30)
Possible Case	456	47 (10.3)
TOTAL	804	226 (28.1)

Table 2. Lyme Disease: Incidence Rates by Residence, July 1 - December 4, 1984

Location	Number of Cases*	Rate per 100,000 population
Fairfield County	14	1.7
Hartford County	48	5.9
Litchfield County	7	4.4
Middlesex County	75	57.7
New Haven County	25	3.2
New London County	147	60.7
Tolland County	9	7.6
Windham County	5	5.3
TOTAL Connecticut	331	10.5

*7 out-of-state cases excluded.

Table 3. Lyme Disease: Incidence Rates for Selected Towns

Location	Number of Cases	Rate per 100,000 population
East Haddam	13	222.6
East Lyme	8	56.3
Colchester	22	276.0
Lyme	7	380.4
Old Lyme	38	602.2

The Epidemiology Section intends to continue surveillance of Lyme Disease and will establish priorities for study based upon the data collected this summer. A surveillance summary and details of future plans will be published in the Connecticut Epidemiologist and sent to participating physicians.

We appreciate the considerable effort of all individuals who participated in this project and look forward to your continuing cooperation. Effective January 1, 1984, we will discontinue use of the two page case report form and replace it with a short form similar to the one which appears below.

In September, 1984, delta hepatitis was diagnosed in a 23-year-old parenteral drug abuser in Connecticut who was hospitalized with fulminant hepatitis. The patient had not traveled outside of Connecticut in the six months prior to illness and had no known

connection with the outbreak of delta hepatitis in Massachusetts. This is the first reported case of delta hepatitis in Connecticut.

Physicians should suspect delta virus infection in the setting of fulminant hepatitis B occurring in a parenteral drug abuser or acute hepatitis occurring in a known carrier of HBsAg. Serologic testing for immunoglobulin M and immunoglobulin G anti-delta antibodies can be arranged on an individual basis through the Virology Section, Laboratory Division (566-4776). Testing will be done only on serum samples that are positive for HBsAg. Serum samples should be frozen and not inactivated. Sodium azide should not be used as a preservative.

[Adapted from CDC. Delta Hepatitis - Massachusetts. MMWR 1984; 33: 493-94.]

Figure 1. Proposed Lyme Disease Report Form

Today's date: ___ mo ___ da ___ yr

Patient Name _____ Male ___ Female ___
(last, first)

Address _____ Age: ___ years
(Street) (City)

Date of onset ___ mo ___ da ___ yr

ECM present ___ yes ___ no ___ unknown
If yes, how many lesions ___ and greatest diameter ___ cm

Neurologic symptoms: ___ yes ___ no ___ unknown
If yes, what _____

Cardiac symptoms: ___ yes ___ no ___ unknown
If yes, what _____

Arthritic symptoms: ___ yes ___ no ___ unknown
(Check only if pain and/or swelling in a joint 2 days)
If yes, describe _____

History of tick bite within 1 month: ___ yes ___ no ___ unknown

Where was case probably acquired: _____
(Town) (State)

Serology Test: ___ yes ___ no
Date(s) sera drawn: _____

___ mo ___ da ___ yr	Results _____	Laboratory _____
___ mo ___ da ___ yr	Results _____	Laboratory _____
___ mo ___ da ___ yr	Results _____	Laboratory _____

Physician _____

Address _____
(Street) (City)

DELTA HEPATITIS

Delta virus is composed of a protein antigen (delta antigen) and a ribonucleic acid of low molecular weight. Although transmissible as an independent infectious agent, delta virus can only infect and cause illness in the presence of active hepatitis B virus (HBV) infection. To be infectious, this incomplete virus requires a coat of hepatitis B surface antigen (HBsAg). Delta virus and HBV may simultaneously infect a host (coprimary infection with HBV/delta virus), or delta virus may superinfect an existing HBV carrier. Either coprimary infection or superinfection may cause acute hepatitis. Delta infection has been associated with fulminant hepatitis B.

In the United States, most cases of delta hepatitis are associated with illicit parenteral drug use or multiple transfusions. Although delta virus is transmitted in a manner similar to HBV, to date, delta virus infection has not been reported in this country in health-care workers or male homosexuals, the other major groups at risk for hepatitis B. Delta infection has contributed to the severity of illness in a continuing outbreak of hepatitis B involving parenteral drug abusers and their sexual contacts in Worcester, Massachusetts.

AIDS UPDATE

As of December 3, 1984, 87 cases of AIDS in adults and two pediatric cases have been confirmed by the State of Connecticut Department of Health Services. Cumulative epidemiologic findings are summarized in Table 1. Three cases have now been reported in individuals who reside east of the Connecticut River.

Social Security and AIDS

In 1983, Congress passed enabling legislation which establishes eligibility for social security benefits for individuals diagnosed with AIDS. Physicians and hospital social workers should advise patients with AIDS to apply for these benefits as soon as the syndrome is diagnosed. The federal government recently appointed a regional coordinator and two Connecticut Social Security AIDS coordinators to assist individuals in obtaining benefits.

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150 Court St.
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(203) 773-2736

Robert Johnston
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REGIONAL COORDINATOR

Kurt Czarnowski
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Boston, Massachusetts 02114
(617) 223-4551

Table 1. Confirmed AIDS cases in Connecticut (as of December 4, 1984)

		By Type of Infection	
Mean Age:	35	KS no PCP	9
Sex:	Males	PCP no KS	50
	Females	PCP and KS	6
Race:	White	Other OI	22
	Black	TOTAL	87
	Hispanic		
Total Cases:	87	KS - Kaposi's Sarcoma	
Dead:	48	PCP - <i>Pneumocystis carinii</i>	
		OI - Opportunistic infection	

By Risk Group		By County of Residence	
Homosexual/Bisexual	48	Fairfield	36
IV Drug Use	19	New Haven	30
Hemophiliac	3	Middlesex	1
Haitian	4	Hartford	15
Heterosexual Contact	1	Litchfield	1
Transfusion with Blood/ Blood Products	2	New London	3
None of the Above/Other	10	Transient	1
		TOTAL	87
TOTAL	87		

AIDS and School Children

In September, 1984, the Commissioner of Education convened a "Special Task Force on AIDS and Schoolchildren" to make recommendations and propose guidelines for the education of children with AIDS or AIDS-Related Complex (ARC) in Connecticut. The Task Force is composed of representatives from the State Departments of Education and Health Services, school administrators, school social workers, health educators, physicians in various specialties, nurses, and various parent/teacher organizations.

At the request of this Task Force, the Connecticut AIDS Medical Advisory Committee met in October to define and make recommendations on health/infection control issues related to children diagnosed with AIDS or ARC attending primary school. This Medical Advisory Committee felt that from a strict medical/infection control perspective such children, if physically and mentally able, should be allowed to attend school with the proviso that certain simple precautions be taken. These recommendations are reprinted below.

CHILDREN WITH AIDS OR UNDERLYING IMMUNE DEFICIENCY ATTRIBUTED TO LAV ATTENDING PUBLIC SCHOOL HEALTH/INFECTION CONTROL ISSUES

1. Given the different manifestations of LAV infection, to whom should these recommendations apply?

The committee felt that the only available and adequately reliable way to diagnose LAV infection was in persons who were clinically ill and who showed clinical and/or laboratory evidence characteristic of acquired immune deficiency. The following recommendations apply to children who have been diagnosed as meeting CDC criteria for pediatric AIDS, or diagnosed as meeting the New York City working definition for ARC (see Connecticut Epidemiologist, Vol. 2, No. 10, 1983), or who are otherwise diagnosed as having an illness likely to be caused by underlying LAV infection. The committee noted that children in the latter two groups have a considerably better prognosis than those meeting the criteria for AIDS, and conceivably could live a normal life span.

The state of the art of specific laboratory testing for LAV infection is not developed enough to consider use of these tests should they become available, for screening purposes.

2. Risks to the child with AIDS or ARC in a school setting.

Although many of these children have come from crowded living conditions and lower socio-economic means, it was felt that the children would have a somewhat greater risk of encountering infections in the school setting compared to the home setting. It was not felt that these children were any different in this respect however, from children with other immune disorders (e.g., leukemia, Hodgkin's, etc.). Infections of particular concern for these children are measles and chickenpox. Children with immune disorders from any cause should be given passive immunization with immune serum globulin (gamma globulin) when exposed to measles or chickenpox, and consideration should be given to removing them from school if cases are occurring in the classroom or in close non-classroom contacts.

For all such children, less concern was expressed over exposure to influenza and other respiratory illnesses. These illnesses are less well-defined clinically, and are so common that exclusion on this basis would, in effect, keep the children out of school almost continuously.

As implied in the exclusion proviso, there must be someone who is responsible for monitoring what diseases are occurring in the school and who is aware of which children in the school have immune deficiency so that these recommendations can be enacted.

3. Risk of transmission of AIDS or other infections to other children or staff.

a. AIDS

Epidemiologic study of more than 6,000 AIDS patients suggests that LAV is transmitted primarily via sexual or blood-to-blood contact. The observed lack of transmission to date in family members who are non-sexual contacts of AIDS cases, and the lack of AIDS cases in medical personnel who directly care for and thus have been exposed to AIDS cases (including via needlesticks) suggest that AIDS is not highly infectious. Accordingly, the advisory group felt that there was little risk of transmission of AIDS in the school setting (a place of casual and not intimate contact).

The (then) yet-to-be published report of LAV in saliva of 8 of 18 persons diagnosed as having AIDS or ARC was of theoretical interest only. The committee noted that the epidemiologic data does not support transmission by saliva. Household and family contacts of AIDS and ARC patients, who have been unwittingly exposed to potentially infected saliva over the prolonged incubation period prior to diagnosis (6 months - 2 years or more) through kissing and sharing of utensils and food have not developed AIDS. Theoretically, infection resulting from exposure to potentially infected saliva was felt to be highly unlikely. In order for infection with LAV (or any virus) to occur, the virus must gain access to cells it can infect. While the full spectrum of cells that LAV can infect is not known, laboratory and epidemiologic evidence suggest that circulating T-lymphocytes (found in blood, lymph, lymph glands, some tissue) are the main, if

not only, host cell for LAV. In order for virus in saliva to gain access to circulating T-lymphocytes, it would have to get beyond the body's mechanical skin and mucous membrane barriers. Thus, the major theoretical exposure to LAV of concern would be human bites.

In order to reasonably limit exposure of other students and staff to body fluids that might contain LAV, the committee made the following recommendations:

If the child has behavioral problems that increase the risk of transmission (e.g., biting or frequent incontinence - not toilet trained) the child should not be in school. If the child has cutaneous (skin) eruptions or weeping

lesions that cannot be covered, he/she should not be in school.

If an injury occurred to the AIDS/ARC child which resulted in bleeding, certain simple precautions should be taken: persons rendering care should wear gloves, and blood spills cleaned up with bleach. The committee emphasized that this should be a general hygiene policy since there may be undiagnosed cases of LAV infection and other diseases which can theoretically result from exposure to infected blood (e.g., hepatitis B). Episodes of incontinence should be handled in a similar manner.

With respect to the kinds of closer contact that can occur in school (sharing of foods, kissing, wrestling), these were not assessed to be significant risks and were felt to be largely uncontrollable behaviors. The advisory group saw no problem with pregnant teachers working with these children. Routine handwashing after physical contact with AIDS/ARC children was not recommended, unless there had been inadvertent contact with potentially infected body fluids.

b. Other Infections

It is unlikely that any opportunistic infections these children might get because of their underlying immune deficiency would be communicable to others. The only reasons to exclude these children from school would be when they were acutely ill (as with other children), or on the advice of their attending physician. Since these children are apt to be routinely ill more often than the average student, a mechanism for consultation between the school nurse, district health officer and the child's physician should be established to answer emergent questions. This also implies informing key school personnel of the child's condition.

4. Patient's Confidentiality vs. the Right to Know

A paramount issue of concern was the protection of patient confidentiality. However, the necessities of removing the child from school during chickenpox or measles outbreaks, regularly ensuring the child is healthy, monitoring the child's behavior (e.g., biting), and taking reasonable precautions during injuries, also make it necessary that selected school personnel know something of the child's status to protect the child, other children, and staff.

The committee questioned whether the school could maintain adequate privacy of the individual.

It was felt that the lack of clear risk to other students would make it medically unnecessary to inform them or their parents that an AIDS/ARC case was in school (see Medical-ethical Issues). In fact, in the absence of high risk, such notification would probably evoke excess fear. If a child were identified by students and parents, the child might be ostracized or treated like a leper. Much of the socializing value of schooling might then be lost and the education of the child and other children might be affected. The psychologic trauma to the child could be great. However, the committee recognized that the legal aspect of the right to know may be found to override the medical concerns.

5. Legal Precedent

The committee noted that there is at least one legal precedent regarding exclusion from school of children carrying an agent (hepatitis B virus) that had not been proven to be transmissible in that setting.

In 1977, some New York City parents became concerned about the placement of mentally retarded hepatitis B carriers in classrooms. Boycotts and picketing occurred. A city health department study showed that the majority of classroom contacts were susceptible and that classroom conditions might promote hepatitis B transmission (1). A special task force reviewed the problem and found that the reported behavior of the mentally retarded hepatitis B carriers would probably allow for some transmission to occur although the potential risk was not quantifiable (2).

In September, 1978, the NYC Board of Education excluded 49 carriers from school and made alternative arrangements for education. Within one week the students were readmitted based on a Federal Court action (3). The court later struck down the separation of carriers from susceptible classmates because such action violated the carriers' rights to a "least restrictive environment under PL 94-142." (4). A higher court sustained the decision on the basis of discrimination against the handicapped.

In essence, the court felt that in the absence of proof that specific cases of hepatitis B had resulted from such exposure, the benefits of complete classroom integration outweigh the costs of potential disease transmission.

6. Medical-Ethical Issues

The committee did not have an opportunity to fully develop and discuss medical-ethical issues, but noted that recommendations in the medical-ethics literature for what to do with hepatitis B carriers in several specific situations were potentially applicable to this situation since the epidemiology and presumed mode of transmission of hepatitis B and AIDS are similar.

In an editorial regarding medical personnel who were hepatitis B carriers, Mosley stated "one should not categorically exclude all carriers (with direct patient contact), however, until there is evidence that the step is actually necessary. It is very well to be as safe as possible, but the cost in this instance is too high. It should be recalled that the segregation of lepers was found to be epidemiologically unjustified only after countless lives had been ruined; close and prolonged contact is necessary to transmit leprosy.

Let us be certain we do not make a similar mistake with respect to HBV carriers" (5).

Perkins described the ethics of the situation of a woman who was a carrier of hepatitis B and insisted on continuing sexual relations and not informing her lovers (6). He focused the "ethical fulcrum" to three issues: which carriers will be infective, which contacts will contract hepatitis and which infected contacts will suffer severe disease (i.e., the probability, imminence and magnitude of the harm in question) and concluded that "the physician's obligations to protect others are weightier only when the harm is very certain, very severe, and to specific others."

FINAL RECOMMENDATIONS

1. That AIDS/ARC children be allowed to attend school as long as they behave acceptably (e.g., do not bite, are toilet-trained), and have no uncoverable sores or skin eruptions.
2. That consideration should be given to temporarily removing AIDS/ARC children from school if measles or chickenpox is occurring in the school population in close proximity to them (e.g., classroom). This also applies to other children with immune system abnormalities.
3. That AIDS/ARC children should be temporarily removed from school when they are acutely ill. This also applies to any child within the school system.
4. That blood or other body fluids emanating from any child, including ones with AIDS/ARC should be treated cautiously. Gloves should be worn when cleaning up blood spills. These "spills" should be disinfected with bleach or another disinfectant, and persons coming in contact with them should wash their hand afterwards. Blood soaked items should be placed in leakproof bags for washing or further disposition. Similar procedures are recommended for dealing with vomitus and fecal or urinary incontinence in any child. Handwashing after contact with a school child is routinely recommended only if physical contact has been made with that child's blood or body fluids, including saliva.
5. That selected persons within the school be informed of the child's immune status. This may include the child's classroom teacher, the school nurse and the principal. The school should respect the right to privacy of the individual.
6. That a medical social worker or other person should be appointed as the child's advocate to assist in problems that may arise, provide educational materials, be a focal point for questions and serve as knowledgeable person for all to confer with.
7. A brochure be produced for school teachers on the subject of infectious diseases and school children.

REFERENCES

1. Bakal, CW, Marr, JS, Novick, LF, et al. Deinstitutionalized mentally retarded hepatitis B surface antigen carriers in public school classes: a descriptive study. *Am J Public Health* 1980; 70: 709-11.

REPORTED MORBIDITY - NOVEMBER, 1984

	AMEBIASIS	BOTULISM	BRUCELLOSIS	ENCEPHALITIS (TOTAL) Primary Post	FOODBORNE OUTBREAKS	GONORRHEA	HEPATITIS A	HEPATITIS B	HEPATITIS NON A NON B	HEPATITIS UNSPECIFIED	LEGIONELLOSIS	LEPROSY	MALARIA	MEASLES	MENINGITIS (All Types)	Aseptic	Hemophilus influenzae	Meningococcal	Other	MUMPS	PERTUSSIS	PSITTACOSIS	RABIES IN ANIMALS	REYE'S SYNDROME	ROCKY MT. SPOTTED FEVER	RUBELLA	SALMONELLA	SHIGELLA	SYPHILIS	TUBERCULOSIS (TOTAL) Pulmonary Other	TYPHOID FEVER			
Total for Nov.	3	0	0	1	1	0	800	6	45	2	1	NA	1	0	0	20	8	9	2	1	0	0	0	0	1	1	62	41	19	17	12	3	0	
Cumulative 1984	44	0	1	16	14	2	8917	76	337	38	27	14	1	10	14	188	59	45	41	41	9	4	2	8	0	2	1	812	101	171	154	116	38	3
Cumulative 1983	31	1	0	24	24	0	9110	82	397	54	18	31	1	12	9	304	149	47	55	53	19	7	2	6	0	3	2	1006	167	162	171	133	36	3

*Laboratory reportable disease. Followup of significant findings discontinued 9/84.

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- Perkins HS, Jonsen AR. Conflicting duties to patients: the case of a sexually active hepatitis B carrier. Ann Intern Med 1981; 94: 523-30.

HAPPY HOLIDAYS FROM EPIDEMIOLOGY

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