EPIDEMIOLOGY SECTION

Connecticut Epidemiologist

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ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)

In June 1981, the Centers for Disease Control (CDC) became aware of an increased occurrence of two rare diseases, Kaposi's sarcoma (KS) and Pneumocystis carinii pneumonia (PCP). Investigators at the University of California at Los Angeles reported five cases of PCP in homosexual men without underlying disease. Shortly thereafter, investigators in New York City, San Franciso, and Los Angeles reported 26 cases of KS in young homosexual men. After receiving the initial reports, the CDC formed a task force to undertake surveillance for these disorders and conduct epidemiologic and laboratory investigations (1). Since work began in June 1981, this complex of health problems and associated alterations in natural immunity has been given the name Acquired Immune Deficiency Syndrome (AIDS).

It now appears beyond question that AIDS is truly a new disease (2). This has been established on the basis of evidence from three sources. First, the CDC have monitored the occurrence of PCP through requests to them for pentamidine isethionate (a controlled substance released only through the CDC for treatment of Pneumocystis carinii infections). Second, the annual incidence of KS has been established on the basis of tumor registry data. Third, causes of mortality in patients with hemophilia A have been followed by the National Hemophilia Foundation.

Prior to 1980, PCP virtually never occurred except in patients with underlying immunosuppressive disease or therapy (1). A review of 194 biopsy proven cases of PCP reported to the CDC between 1967 and 1970 revealed that all but one patient had either underlying immunosuppressive disease or therapy. In the requests made to the CDC for pentamidine isethionate from 1976 through June 1980, only one request was made for an adult who had Pneumocystis carinii pneumonia without an underlying disease. Between July 1980 and December 1980, nine such requests were received and in 1981, 55 requests were received for PCP cases without underlying immunosuppressive disease. These cases represented 37% of all requests for adults that year.

Previous data on KS in the United States indicated that it was an extremely unusual and indolent tumor occurring in elderly males. From 1973 to 1977, approximately 30 cases of KS per year were reported to the National Cancer Institute (NCI) through its surveillance, epidemiology, and end results (SEER) program. This program surveys 10 areas of the country for the incidence and outcome of various cancers and represents slightly more than 10% of the U.S. population. KS occurred in patients over 50 years of age with a male to female ratio of 3:1. Similarly, among 92 patients with Kaposi's sarcoma treated at Memorial Sloane-Kettering Cancer Center between 1949 and 1975, the mean age was 63 years, the male to female ratio was 2:1, and there was a higher incidence in patients of Jewish and Italian descent. One third of these patients had at least one other primary malignancy (5). The report of 26 cases of KS in young males in 1981 was a dramatic departure from previous experience with this tumor.

A third line of evidence indicating the new nature of AIDS was the pattern of deaths in patients with hemophilia A. Prior to 1982, no deaths occurred in hemophiliacs which were on the basis of history even suggestive of AIDS. In 1982, however, AIDS represented the second leading cause of death among hemophiliacs (3).

TABLE 1
Acquired Immune Deficiency Syndrome (AIDS) Activity:
Kaposi's Sarcoma (KS), Pneumocystis carinii pneumonia (PCP),
and Other Opportunistic Infection (OI): Cases Reported to the CDC
As of January 26, 1983, U.S.A.

	CASES	PERCENT OF TOTAL	DEATHS	PERCENT DEAD IN EACH ILLNESS CATEGORY
KS without PCP	279	28.5	60	21.5
PCP without KS	487	49.7	222	45.6
Both KS and PCP	80	8.1	39	48.8
OI without KS or PCP	134	13.7	60	44.8
TOTAL	980	100.0	381	38.9

Epidemiology

For the limited purposes of epidemiologic surveillance, the CDC defines a case of AIDS as a person who has had:

1. A reliably diagnosed disease that is strongly suggestive of an underlying cellular immune deficiency, but who, at the same time, has had:

2. No known cause of cellular immune deficiency nor any other cause of reduced resistance reported to be associated with that disease.

As of January 26, 1983, the CDC have received reports of 1,050 individuals with KS and/or life threatening opportunistic infections resulting from AIDS. Nine hundred and eighty of these cases were reported in the United States and 70 were reported from 15 foreign countries. Table 1 presents data on domestic cases by type of disease. Approximately half have PCP without KS. The overall case mortality rate is 39%.

The age distribution of AIDS cases is shown in Table 2. The median age is 34 years. Of the 980 domestic cases reported, 924 (94%) are male and 56 (6%) are female.

TABLE 2
Cases of AIDS by Age in Years, United States

AGE	CASES	PERCENT OF TOTAL
Under 20	4	0.4
20-24	41	4.2
25-29	173	17.7
30-34	273	27.9
35-39	198	20.2
40-49	215	21.9
Over 50	69	7.0
Unknown	7	0.7
TOTAL	980	100.0

Distribution of AIDS cases by race is shown in Table 3. Sexual preference of patients diagnosed as having AIDS is shown in Table 4. Seventy three percent of patients are either homosexual or bisexual males.

TABLE 3
Cases of AIDS by Race, United States

RACE/ETHNICITY	CASES	PERCENT OF TOTAL
White, not Hispanic	579	59.1
Black, not Hispanic	214	21.8
Hispanic	123	12.6
Haitian	52	5.3
American Indian/Alaska Native	2	0.2
Asian	3	0.3
Unknown	7	0.7
TOTAL	980	100.0

TABLE 4
Cases of AIDS by Sexual Orientation, United States

SEXUAL ORIENTATION	CASES	PERCENT OF TOTAL
Homosexual Males	616	62.9
Bisexual Males	97	9.9
Heterosexual Males	168	17.1
Males of Unknown Sexual Orientation	39	4.0
None (4 males - 2 females)	6	0.6
Heterosexual Females	54	5.5
TOTAL	980	100.0

AIDS cases by place of residence within the United States are shown in Table 5. Four states have reported 83% of the cases: New York, California, Florida, and New Jersey. AIDS cases in New York City comprise 45% of the U.S. total, while AIDS cases residing in San Francisco make up 10.5% of the total. A total of 33 states have reported AIDS cases to the CDC Task Force.

TABLE 5
AIDS by Place of Residence

RESIDENCE	CASES	PERCENT OF TOTAL
New York State	473	48.3
New York City	439	44.8
Other, New York	34	3.5
California	212	21.6
San Francisco	103	10.5
Los Angeles	62	6.3
Other, California	47	4.8
Florida	61	6.2
Miami	39	4.0
Other, Florida	22	2.2
New Jersey	67	6.8
Illinois	22	2.2
Texas	21	2.1
Pennsylvania	17	1.7
Georgia	15	1.5
Other States, USA (25)	92	9.4
TOTAL - USA	980	100.0

In Connecticut, as of February 23, 1983, 13 patients with AIDS have been reported. The mean age for Connecticut cases is 39.6 years with a range from 28 to 58 years. Eleven patients (85%) with AIDS are male. Seven (54%) are white, three (23%) are black, and three (23%) are of Hispanic origin. No individuals of Haitian background have been reported. By sexual orientation, nine of 13 Connecticut AIDS cases (69%) are homosexuals, three individuals are heterosexual, and the sexual preference of one case is unknown. Eight of the 13 cases have died (61.5%). Nine of the 13 patients have had PCP without KS. Two of the Connecticut cases have had KS without PCP, one has had both KS and PCP and one had toxoplasmosis of the central nervous sytem. Only one of the 13 cases has a history of intravenous drug abuse. Towns in Connecticut reporting AIDS cases include Bridgeport, Danbury, Darien, Derby, Fairfield, Hartford, New Haven, Orange, Stamford, and Stratford.

Fifteen foreign countries have also reported patients with AIDS to the CDC Task Force. Seventy individual patients have been reported. Other countries reporting cases are Haiti (22), France (11), and Canada (11). Five of the 11 Canadian residents are of Haitian background.

Risk Factors

At the present time, patients with AIDS may be separated into groups based on the following risk factors: homosexual or bisexual males (75%), intravenous drug abusers with no history of male homosexual activity (13%), Haitians with neither a history of homosexuality nor a history of intravenous drug abuse (6%), persons with hemophilia A who were not Haitians, homosexuals or intravenous drug abusers

and persons in none of the other groups (0.3%) (5%) (4). The risk of acquiring AIDS is extremely low in the general population. Geographic clustering of AIDS cases by place of residence suggests that the risk factors are not randomly distributed nationwide or in the homosexual community.

Eighty-five percent of the early cases reported to the CDC were among male homosexuals, identifying homosexuality as a risk factor. It is estimated that 10% of American males are either homosexual or bisexual. Based on these figures, a relative risk of 51 was calculated for the association between male homosexuality and AIDS. This clearly indicates a relationship between the disease and the homosexual environment (1). Geographic clustering of cases has been felt to reflect either the unusual lifestyle of homosexuals in large cities in the United States or common sources of a possible primary infectious agent in these cities.

Intravenous drug abusers with no history of male homosexual activity have been identified as a second group at increased risk for acquiring AIDS. Of the 593 cases of AIDS reported to the CDC between June 1, 1981 and September 15, 1982, 25.5% were found to have a history of intravenous drug abuse (4).

Haitians with neither a history of homosexuality nor a history or intravenous drug abuse are a third group at increased risk of AIDS. Fifty-two cases in Haitians have been reported, accounting for 5.3% of the total U.S. cases. In a series of 10 Haitians with AIDS reported from Brooklyn Downstate Medical Center, none were homosexuals or intravenous drug abusers (5). All of these patients developed opportunistic infections normally controlled by cell-mediated immunity. Sixty percent had infection, previously or concurrently, with Mycobacterium tuberculosis. Eighty-six percent had evidence of either previous or concurrent hepatitis B infection. The case fatality rate was 60%. Duration of residence in the United States for these 10 patients ranged from three months to eight years, indicating that AIDS was not limited to recent immigrants from Haiti.

Patients with classical hemophilia or hemophilia A have been identified as a fourth group at increased risk of AIDS. By mid-January 1983, eight confirmed cases of AIDS had been reported in hemophiliacs, two were under investigation, and an additional 37 hemophiliacs had an AIDS-like illness. Prior to 1982, no deaths in hemophilia A patients were suggestive of AIDS on the basis of history. The concern in these patients is their exposure to blood products, specifically commercial concentrates of Factor VIII prepared from pooled plasma. Of seven confirmed cases of AIDS in hemophiliacs reported by the CDC in December 1982, six were defined as having severe to moderately severe hemophilia (Factor VIII Assay less than 5%). All had received Factor VIII concentrates as replacement therapy, six had received other blood components, none had a history of opportunistic infections, and two were less than 10 years of age (6).

Approximately 5% of the total U.S. AIDS cases have none of the above identifiable risk factors (4). AIDS has now been reported in female sexual partners of males with AIDS (7), prison inmates (8), infants less than two years of age (9), and in one person receiving blood transfusions (10). Several cases or suspected cases of AIDS who have received blood transfusions and have no other risk factors are under investigation. Their blood donors are being interviewed, examined, and tested for immunologic abnormalities. Donors with suspicious findings will be followed.

Diseases Strongly Suggestive of Underlying Cellular Immune Deficiency

As discussed previously, the CDC defines a case of AIDS as a disease, at least moderately predictive of a defect in cell-mediated immunity occuring in a person with no known cause for diminished resistance to that disease (4). Although PCP and KS together account for 86% of all U.S. cases, other opportunistic infections and neoplasms have been identified. These can be divided into the following etiologic categories: protozoal and helminthic infections, fungal infections, bacterial infections, viral infections, and neoplasms. Within each category, diseases reported to date are listed below in alphabetical order. "Disseminated infection" refers to the involvement of liver, bone marrow or multiple organs, not simply involvement of lungs and multiple lymph nodes. Diagnostic methods are shown in parentheses.

A. Protozoal and Helminthic Infections

1. Cryptosporidiosis, intestinal infection causing diarrhea for over one month (histology or stool microscopy).

2. Pneumocystis carinii pneumonia, (histology, or microscopy of a "touch" preparation or bronchial washings).

3. Strongyloidosis, causing pneumonia, central nervous system infection, or disseminated infection (histology).

4. Toxoplasmosis, causing pneumonia or central nervous system infection (histology or microscopy of a "touch" preparation).

B. Fungal Infections

1. Aspergillosis, causing central nervous system or disseminated infection (culture or histology).

2. Candidiasis, causing esophagitis or disseminated infection (histology, or microscopy of a "wet" preparation from the esophagus, or endoscopic findings of white plaques on an erythematous mucosal base).

3. Coccidioidomycosis, causing disseminated or central nervous system infection (culture or histology).

4. Cryptococcosis, causing pulmonary, central nervous system, or disseminated infection (culture, antigen detection, histology, or India ink preparation of CSF).

5. Histoplasmosis, causing disseminated or central nervous system infection (culture or histology).

C. Bacterial Infections

1. "Atypical" mycobacteriosis (species other than M. tuberculosis and M. leprae), causing disseminated infection (culture).

2. Nocardiosis (culture or histology).

D. Viral Infections

1. Cytomegalovirus, causing pulmonary, gastrointestinal tract, or central nervous system infection (histology).

2. Herpes simplex virus, causing chronic mucocutaneous infection with ulcers persisting more than one month, or pulmonary, gastrointestinal tract, or disseminated infection (culture, histology, or cytology).

3. Progressive multifocal leukoencephalopathy (presumed to be caused by Papovavirus)(histology).

B. Cancer

1. Kaposi's sarcoma (histology).

2. Primary lymphoma limited to the brain (histology).

Patients with known causes of celluar immune deficiency or other causes of reduced resistance reported to be associated with particular diseases have been excluded from consideration as cases of AIDS. These known causes of reduced resistance include: systemic corticosteroid or other immunosuppressive or cytotoxic therapy, disseminated neoplasia of the lymphoreticular system (not including malignancy entirely localized to one anatomic site such as primary cerebral lymphoma), age 60 years or older at diagnosis, age under 28 days at diagnosis, and an immune deficiency which appears to be a genetic or developmental defect.

Immunology and Laboratory Results

In patients with AIDS, there appears to be a progressive course of superimposed infections, fever, lymphadenopathy, leukopenia, and decreased delayed hypersensitivity. At the present time, there is no reliable, inexpensive, or widely available test for the screening or detection of AIDS. For this reason, the working case definition is the best currently available means for incidence monitoring. Various laboratory abnormalities, however, have been identified in large proportions of the patients with AIDS.

Immunologic abnormalities have been identified in cell-mediated immunity. These abnormalities in cell-mediated immunity have been present in conjunction with normal or elevated immunoglobulin levels, indicating an intact humoral immune system. Cellular immune abnormalities have been present in vivo and in vitro. Patients with AIDS show skin test anergy to the common antigens which induce delayed hypersensitivity. In some patients, lymphopenia has been identified; this has been defined as an absolute circulating lymphocyte count less than 1,000 per cubic mm. Lymphocyte cell typing through the use of monoclonal antibody technology indicates both quantitative changes and altered proportions of helper and suppressor T lymphocytes (11). Helper/inducer T cells (T4 antigen) have been shown to be decreased. Suppressor/cytotoxic T cells (T8 antigen) have been shown to be moderately decreased, normal, or increased. These quantitative alterations in T lymphocyte subsets have produced a consistently altered helper to suppressor or T4:T8 ratio. Normal helper/suppressor ratios in peripheral blood range between 1.0 and 3.3 with a mean of 1.9 (12). In patients with AIDS, this ratio is inverted; T4:T8 ratios range from 0.03 to 1.1 with a mean of 0.4 (12). Because of the interlaboratory variability in methodology, a universal minimum value for the T4:T8 ratio has not been established. With the methodology employed at the CDC, an abnormal T4:T8 ratio is defined as less than 0.9.

In contrast to the altered cell mediated immunity present in patients with AIDS, elevated antiviral antibody titers have been demonstrated. Ninety to 100% of cases of AIDS have been shown to have antibody to hepatitis B core antigen (3). In homosexual males, who comprise the majority of AIDS cases, 94% have evidence of previous cytomegalovirus infection by serology. Elevated antibody titers have also been identified against hepatitis A and Epstein-Barr virus.

The possibility of a genetic predisposition to the development of AIDS has been explored by examining the markers of the Human Lymphocyte Antigens (HLA) system in patients with AIDS. AIDS cases with KS have been shown to have an increased frequency of the HLA-DR5 genotype. This particular HLA marker was identified in 63% of patients with KS; the presence of HLA-DR5 appears to correlate with a 5.5 times increased risk of KS (12). HLA-DR5 is present in 18-50% of blacks, 36% of Italians, and 34% of people of Jewish extraction, groups which have traditionally had the highest rates of KS. This finding raises the possibility of a genetic predisposition to the altered immune state of AIDS.

Discussion

Epidemiologic observations increasingly suggest that AIDS is caused by a transmissable agent, probably an infectious agent (5,7,8,13). Transmission appears to require the intimate contact of mucosal surfaces, such as occurs through sexual contact or parenteral contact (13). Airborne and casual interpersonal contact appear unlikely as means of transmission of the infectious agent. The epidemiologic features of the transmissible agent for AIDS are analagous to those of hepatitis B. These features include transmission by blood and body fluids, a long incubation period, and a probable carrier state (5). Although evidence is limited at present, cases such as that of the infant with possible transfusion-associated AIDS suggest that the transmissable agent can be present in the blood of donors before the onset of symptomatic illness and that the incubation period can be relatively long (10).

Questions remain as to whether the transmissible agent is a new and previously unrecognized infectious agent or whether immunosupression is due to chronic exposure to a recognized agent (2). Whether the infection or the immune deficiency comes first also remains uncertain (11).

Various hypotheses have been advanced in an attempt to understand why the epidemic of AIDS has occurred now. First, the cytomegalovirus (CMV) has been postulated as an inducing agent for the deficiency in cell-mediated immunity (1,2). Homosexual males are known to have frequent serologic evidence of previous CMV infection. CMV inclusions are sometimes seen concomitantly with PCP, particularly in renal transplant recipients. A serologic association has been demonstrated between CMV and KS as compared with matched controls. Finally, in African patients with KS, tissue culture cell lines have been shown to contain a herpes type virus, which on nucleic acid sequencing from tumor cells, has been shown to be consistant with CMV (5). It is also known that infection with CMV produces transient immunosuppression. It has been postulated that sexual promiscuity may produce recurrent infection with CMV resulting in a profound and apparently permanent immunosuppression.

Second, the possibility of immunologic overload due to multiple and/or recurrent infections has been suggested as a cause of immunosupression. In the male homosexual population, the frequency of sexually transmitted diseases and sexually transmitted enteric diseases is well established (14). Under this hypothesis, the expression of the basic immunologic defect of AIDS resulting from a transmissable agent depends on such factors as chronic illness, recurrent acute infections, nutritional status, environmental agents, and genetic predisposition.

A third hypothesis is that AIDS is the result of infection with a new transmissible agent (1). The analogy of the retrovirus Human T cell Leukemia Virus (HTLV) that is associated with T cell Lymphoma has been drawn to AIDS. Expression of the immunologic abnormality by such a transmissible agent could again depend on such factors as nutritional status, environmental agents, and/or genetic predisposition.

Recommendations

1. Surveillance/Reporting

Physicians aware of patients fitting the case definition of AIDS are requested to report such cases to the CDC through their local or state health departments (4). These cases can be reported to the Epidemiology Program at the State of Connecticut Department of Health Services (566-5778). The following information should be included at the time of reporting: patient's name, address, birth date, age, sex, race, sexual preference, disease suggestive of underlying cellular immune deficiency and the method of diagnosis, history of intravenous drug abuse, and current clinical status. This information will in turn be reported to the national AIDS Registry at the CDC, Atlanta.

2. Testing/Screening.

Specific laboratory tests for the diagnosis of AIDS are not currently available. Immunological testing of circulating lymphocytes can be performed to establish a deficiency in cell-mediated immunity. Arrangements to perform T lymphocyte typing can be made with the CDC or other reference laboratories. The testing methodology is currently available at a limited number of institutions.

Because of a concern regarding blood-borne transmission of AIDS, methods of screening blood donors have been discussed (3). These methods have included questions asked of potential donors in an attempt to identify "high risk" donors. Also, the use of "surrogate tests" have been suggested. These tests would identify antibodies, such as the antibody to hepatitis B core antigen, that are known to be present in a majority of patients with AIDS (3).

3. Precautions.

No cases of AIDS in hospital personnel resulting from the care of AIDS patients have been reported. Health care personnel should use the same precautions with AIDS as are currently in use for hepatitis B. These precautions include the avoidance of direct skin and mucous membrane contact with blood, blood products, excretions, secretions, and tissues of persons judged likely to have AIDS. Out-patient care, dental care, surgery, necropsy, and hemodialysis should, in general, follow the procedures appropriate for patients known to be infected with hepatitis B virus. No blood or organ donation should be accepted from patients with AIDS (13).

Groups for which these precautions should be considered include the following: 1) opportunistic infection occurring in patients without an underlying disease indicative of impaired cellular immunity, 2) KS occurring in patients less than 60 years of age, 3) chronic lymphadenopathy, weight loss, and fever occurring in homosexual males, IV drug abusers, Haitians, or patients with hemophilia A, and 4) patients with confirmed or suspect AIDS.

Precautions to be taken by health care personnel working with patients with AIDS include the following: 1) avoiding accidental skin punctures, 2) using gloves when handling blood or body fluids, 3) using gowns when clothing may be soiled with body fluids, blood, secretions, or excretions, 4) hand washing, 5) labeling of blood and other specimens with special warning such as "blood precautions" or "AIDS precautions", 6) cleaning of blood spills with a disinfectant solution such as sodium hypochlorite, 7) handling of soiled laundry in a fashion analagous to hepatitis B, 8) needle handling as with hepatitis B, 9) using disposable syringes when possible, and 10) using private rooms when patients are too ill to observe good hygiene (profuse diarrhea, fecal incontinence, or altered behavior secondary to central nervous system infections) (13).

Precautions for laboratory workers dealing with clinical specimens from patients with AIDS should include the following: 1) mechanical pipetting and the avoidance of all mouth pipetting, 2) using lab coats or gowns when working with clinical specimens, 3) using gloves to avoid skin contact with blood or other body fluids, 4) minimizing the creation of droplets and aerosols while handling specimens, 5) using biological safety cabinets and/or other primary containment devices to avoid droplet exposure, 6) decontaminating laboratory surfaces with disinfectants, 7) autoclaving of used laboratory materials, and 8) appropriate hand washing (13).

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REPORTED MORBIDITY - FEBRUARY, 1983

	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 FEB 1983	0	0	0	2	2	0	0	617	2	10	1	0	6	0	0	0	11	0	2	4	5	1	0	0	0	0	0	0	44	49	11	10	8	2	0
CUMULATIVE 1983	0	0	0	2	2	0	2	3525	4	20	2	1	6	0	1	0	28	2	9	10	7	5	0	0	0	0	0	0	77	64	32	19	15	4	0
CUMULATIVE 1982	4	0	0	10	8	2	0	3195	18	93	7	7	1	1	4	0	37	9	8	9	11	5	2	0	0	0	0	0	70	54	19	6	3	2	1

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UPDATE: INFLUENZA ACTIVITY - UNITED STATES, CONNECTICUT

Influenza virus activity continues in all regions of the United States. An excess in the ratio of deaths from pneumonia and influenza (P and I) to total deaths was recorded from 121 cities for the eighth consecutive week (January 15 through March 12). Most virus isolations (93%) have been identified as type A (H3N2) related to the A/Bangkok/78 component of the current vaccine, and 5% have been identified as type A (H1N1) related to the A/Brazil/78 component. Six states have reported influenza type B virus (10 isolates).

In Connecticut, 104 laboratory confirmed cases have been identified by the state virology laboratory. All of these were identified as type A (H3N2) except for one case in which type A (H1N1) was identified. Cases range in age from 3 months to 99 years with a mean age of 47.1.

The syndrome described is typically a febrile respiratory illness characterized by fever ($\geq$101°F), cough, headache, chills, sore throat, pharyngitis, chest pain, myalgia and fatigue. Both bronchitis and pneumonia have been reported.

Influenza activity has been documented throughout the state. Laboratory confirmed cases were distributed as follows: Fairfield County, 24 cases (23%); Hartford County, 29 cases (28%); Litchfield County, 12 cases (11.5%); Middlesex County, 13 cases (12.5%); New Haven County, 11 cases (11%); New London County, 3 cases (3%); Tolland County, 8 cases (8%); and Windham County, 3 cases (3%).

Outbreaks of respiratory illness due to Influenza A have been confirmed in four extended care facilities (Bridgeport, Moodus, New London, and Rockville). Cases occurred in both residents and employees with attack rates ranging from 10% to 43%. At this time, there is not sufficient data available to estimate vaccine efficacy in these outbreaks.

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