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This publication includes all the articles related to AIDS that have appeared in the *Morbidity and Mortality Weekly Report*, published by the Centers for Disease Control. These articles, arranged in chronological order, track the reporting of information on AIDS from 1981, when CDC first published information on Kaposi's sarcoma and *Pneumocystis carinii* pneumonia occurring in young homosexual men. In 1981, CDC formed a task force to establish risk factors, carry out laboratory studies, and disseminate timely information on the disease now known as the acquired immunodeficiency syndrome (AIDS).

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1981 June 5;30:250–2

Pneumocystis Pneumonia — Los Angeles

In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.

Patient 1: A previously healthy 33-year-old man developed *P. carinii* pneumonia and oral mucosal candidiasis in March 1981 after a 2-month history of fever associated with elevated liver enzymes, leukopenia, and CMV viruria. The serum complement-fixation CMV titer in October 1980 was 256; in May 1981 it was 32.* The patient's condition deteriorated despite courses of treatment with trimethoprim-sulfamethoxazole (TMP/SMX), pentamidine, and acyclovir. He died May 3, and postmortem examination showed residual *P. carinii* and CMV pneumonia, but no evidence of neoplasia.

Patient 2: A previously healthy 30-year-old man developed *P. carinii* pneumonia in April 1981 after a 5-month history of fever each day and of elevated liver-function tests, CMV viruria, and documented seroconversion to CMV, i.e., an acute-phase titer of 16 and a convalescent-phase titer of 28* in anticomplement immunofluorescence tests. Other features of his illness included leukopenia and mucosal candidiasis. His pneumonia responded to a course of intravenous TMP/SMX, but, as of the latest reports, he continues to have a fever each day.

Patient 3: A 30-year-old man was well until January 1981 when he developed esophageal and oral candidiasis that responded to Amphotericin B treatment. He was hospitalized in February 1981 for *P. carinii* pneumonia that responded to oral TMP/SMX. His esophageal candidiasis recurred after the pneumonia was diagnosed, and he was again given Amphotericin B. The CMV complement-fixation titer in March 1981 was 8. Material from an esophageal biopsy was positive for CMV.

Patient 4: A 29-year-old man developed *P. carinii* pneumonia in February 1981. He had had Hodgkins disease 3 years earlier, but had been successfully treated with radiation therapy alone. He did not improve after being given intravenous TMP/SMX and corticosteroids and died in March. Postmortem examination showed no evidence of Hodgkins disease, but *P. carinii* and CMV were found in lung tissue.

Patient 5: A previously healthy 36-year-old man with a clinically diagnosed CMV infection in September 1980 was seen in April 1981 because of a 4-month history of fever, dyspnea, and cough. On admission he was found to have *P. carinii* pneumonia, oral candidiasis, and CMV retinitis. A complement-fixation CMV titer in April 1981 was 128. The patient has been treated with 2 short courses of TMP/SMX that have been limited because of a sulfa-induced neutropenia. He is being treated for candidiasis with topical nystatin.

The diagnosis of *Pneumocystis* pneumonia was confirmed for all 5 patients antemortem by closed or open lung biopsy. The patients did not know each other and had no known common contacts or knowledge of sexual partners who had had similar illnesses. The 5 did not have comparable histories of sexually transmitted disease. Four had serologic evidence of past hepatitis B infection but had no evidence of current hepatitis B surface antigen. Two of the 5 reported having frequent homosexual contacts with various partners. All 5 reported using inhalant drugs, and 1 reported parenteral drug abuse. Three patients had profoundly depressed numbers of thymus-dependent lymphocyte cells and profoundly depressed *in vitro* proliferative responses to mitogens and antigens. Lymphocyte studies were not performed on the other 2 patients.

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Editorial Note: *Pneumocystis* pneumonia in the United States is almost exclusively limited to severely immunosuppressed patients (*1*). The occurrence of pneumocystosis in these 5 previously healthy individuals without a clinically apparent underlying immunodeficiency is unusual. The fact that these patients were all homosexuals suggests an association between some aspect of a homosexual lifestyle or disease acquired through sexual contact and *Pneumocystis* pneumonia in this population. All 5 patients described in this report had laboratory-confirmed CMV disease or virus shedding within 5 months

*Paired specimens not run in parallel.

of the diagnosis of *Pneumocystis* pneumonia. CMV infection has been shown to induce transient abnormalities of *in vitro* cellular-immune function in otherwise healthy human hosts (*2,3*). Although all 3 patients tested had abnormal cellular-immune function, no definitive conclusion regarding the role of CMV infection in these 5 cases can be reached because of the lack of published data on cellular-immune function in healthy homosexual males with and without CMV antibody. In 1 report, 7 (3.6%) of 194 patients with pneumocystosis also had CMV infection; 40 (21%) of the same group had at least 1 other major concurrent infection (*1*). A high prevalence of CMV infections among homosexual males was recently reported: 179 (94%) of 190 males reported to be exclusively homosexual had serum antibody to CMV, and 14 (7.4%) had CMV viruria; rates for 101 controls of similar age who were reported to be exclusively heterosexual were 54% for seropositivity and zero for viruria (*4*). In another study of 64 males, 4 (6.3%) had positive tests for CMV in semen, but none had CMV recovered from urine. Two of the 4 reported recent homosexual contacts. These findings suggest not only that virus shedding may be more readily detected in seminal fluid than in urine, but also that seminal fluid may be an important vehicle of CMV transmission (*5*).

All the above observations suggest the possibility of a cellular-immune dysfunction related to a common exposure that predisposes individuals to opportunistic infections such as pneumocystosis and candidiasis. Although the role of CMV infection in the pathogenesis of pneumocystosis remains unknown, the possibility of *P. carinii* infection must be carefully considered in a differential diagnosis for previously healthy homosexual males with dyspnea and pneumonia.

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1981 July 4;30:305–8

Kaposi's Sarcoma and *Pneumocystis* Pneumonia Among Homosexual Men — New York City and California

During the past 30 months, Kaposi's sarcoma (KS), an uncommonly reported malignancy in the United States, has been diagnosed in 26 homosexual men (20 in New York City [NYC], 6 in California). The 26 patients range in age from 26-51 years (mean 39 years). Eight of these patients died (7 in NYC, 1 in California)—all 8 within 24 months after KS was diagnosed. The diagnoses in all 26 cases were based on histopathological examination of skin lesions, lymph nodes, or tumor in other organs. Twenty-five of the 26 patients were white, 1 was black. Presenting complaints from 20 of these patients are shown in Table 1.

Skin or mucous membrane lesions, often dark blue to violaceous plaques or nodules, were present in most of the patients on their initial physician visit. However, these lesions were not always present and often were considered benign by the patient and his physician.

A review of the New York University Coordinated Cancer Registry for KS in men under age 50 revealed no cases from 1970-1979 at Bellevue Hospital and 3 cases in this age group at the New York University Hospital from 1961-1979.

Seven KS patients had serious infections diagnosed after their initial physician visit. Six patients had pneumonia (4 biopsy confirmed as due to *Pneumocystis carinii* [PC]), and one had necrotizing toxoplasmosis of the central nervous system. One of the patients with *Pneumocystis* pneumonia also experienced severe, recurrent, herpes simplex infection; extensive candidiasis; and cryptococcal meningitis. The results of tests for cytomegalovirus (CMV) infection were available for 12 patients. All 12 had serological evidence of past or present CMV infection. In 3 patients for whom culture results were available, CMV was isolated from blood, urine and/or lung of all 3. Past infections with amebiasis and hepatitis were commonly reported.

TABLE 1. Presenting complaints in 20 patients with Kaposi's sarcoma

Presenting complaint	Number (percentage) of patients
Skin lesion(s) only	10 (50%)
Skin lesions plus lymphadenopathy	4 (20%)
Oral mucosal lesion only	1 (5%)
Inguinal adenopathy plus perirectal abscess	1 (5%)
Weight loss and fever	2 (10%)
Weight loss, fever, and pneumonia (one due to *Pneumocystis carinii*)	2 (10%)

Since the previous report of 5 cases of *Pneumocystis* pneumonia in homosexual men from Los Angeles (*1*), 10 additional cases (4 in Los Angeles and 6 in the San Francisco Bay area) of biopsy-confirmed PC pneumonia have been identified in homosexual men in the state. Two of the 10 patients also have KS. This brings the total number of *Pneumocystis* cases among homosexual men in California to 15 since September 1979. Patients range in age from 25 to 46 years.

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Editorial Note: KS is a malignant neoplasm manifested primarily by multiple vascular nodules in the skin and other organs. The disease is multifocal, with a course ranging from indolent, with only skin manifestations, to fulminant, with extensive visceral involvement (*2*).

Accurate incidence and mortality rates for KS are not available for the United States, but the annual incidence has been estimated between 0.02-0.06 per 100,000; it affects primarily elderly males (*3,4*). In a series of 92 patients treated between 1949 and 1975 at the Memorial Sloan-Kettering Cancer Institute in NYC, 76% were male, and the mean age was 63 years (range 23-90 years) at the time of diagnosis (*5*).

The disease in elderly men is usually manifested by skin lesions and a chronic clinical course (mean survival time is 8-13 years) (*2*). Two exceptions to this epidemiologic pattern have been noted previously. The first occurs in an endemic belt across equatorial Africa, where KS commonly affects children and young adults and accounts for up to 9% of all cancers (*3*). Secondly, the disease appears to have a higher incidence in renal transplant recipients (*6-9*) and in others receiving immunosuppressive therapy (*10-12*).

The occurrence of this number of KS cases during a 30-month period among young, homosexual men is considered highly unusual. No previous association between KS and sexual preference has been reported. The fulminant clinical course reported in many of these patients also differs from that classically described for elderly persons.

The histopathologic diagnosis of KS may be difficult for 2 reasons. Changes in some lesions may be interpreted as nonspecific, and other cutaneous and soft tissue sarcomas, such as angiosarcoma of the skin, may be confused with KS (*13,14*).

That 10 new cases of *Pneumocystis* pneumonia have been identified in homosexual men suggests that the 5 previously reported cases were not an isolated phenomenon (*1*). In addition, CDC has a report of 4 homosexual men in NYC who developed severe, progressive, perianal herpes simplex infections and had evidence of cellular immunodeficiencies. Three died, 1 with systemic CMV infection. The fourth patient is currently undergoing therapy. It is not clear if or how the clustering of KS, pneumocystis, and

other serious diseases in homosexual men is related. What is known is that the patients with *Pneumocystis* pneumonia described in the previous report showed evidence of impaired cellular immunity and previous or current CMV infection (*1*). Furthermore, serologic evidence of past CMV infection and active shedding of CMV have been shown to be much more common among homosexual men than heterosexual men attending a sexually transmitted disease clinic (*15*). A specific serologic association with CMV infection has been demonstrated among American and European patients with KS (*16, 17*) and herpes-type virus particles have been demonstrated in tissue culture cell lines from African cases of KS (*18*). It has been hypothesized that activation of oncogenic virus during periods of immunosuppression may result in the development of KS (*19*). Although immunosuppression often results in CMV infection, it is not yet clear whether CMV infection precedes or follows the above-mentioned disorders.

Although it is not certain that the increase in KS and PC pneumonia is restricted to homosexual men, the vast majority of recent cases have been reported from this group. Physicians should be alert for Kaposi's sarcoma, PC pneumonia, and other opportunistic infections associated with immunosuppression in homosexual men.

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1981 Aug 28;30:409—10

Follow-Up on Kaposi's Sarcoma and *Pneumocystis* Pneumonia

Twenty-six cases of Kaposi's sarcoma (KS) and 15 cases of *Pneumocystis carinii* pneumonia (PCP) among previously healthy homosexual men were recently reported (*1,2*). Since July 3, 1981, CDC has received reports of an additional 70 cases of these 2 conditions in persons without known underlying disease. The sex, race, sexual preference, and mortality data known for 108 persons with either or both conditions are summarized in Table 1.

The majority of the reported cases of KS and/or PCP have occurred in white men. Patients ranged in age from 15-52 years; over 95% were men 25-49 years of age. Ninety-four percent (95/101) of the men for whom sexual preference was known were homosexual or bisexual. Forty percent of the reported cases were fatal. Of the 82 cases for which the month of diagnosis is known, 75 (91%) have occurred since January 1980, with

55 (67%) diagnosed from January through July 1981. Although physicians from several states have reported cases of KS and PCP among previously healthy homosexual men, the majority of cases have been reported from New York and California.

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Editorial Note: KS is a rare, malignant neoplasm seen predominantly in elderly men in this country. In elderly men the disease is manifested by skin lesions and a chronic clinical course; it is rarely fatal (*3*). In contrast, the persons currently reported to have KS are young to middle-aged men, and 20% of the cases have been fatal. Although some of the patients have presented with the violaceous skin or mucous membrane lesions

TABLE 1. Cases of Kaposi's sarcoma (KS) and *Pneumocystis carinii* pneumonia (PCP) reported to CDC with dates of onset between January 1976 and July 1981

Diagnosis (number of patients)	Sex		Race of men				Sexual preference of men			Fatality (percentage)
	Male	Female	White	Black	Hispanic	Unknown	Homosexual or bisexual	Heterosexual	Unknown	
KS and PCP (N=7)	7	0	5	0	1	1	7	0	0	3/7 (43%)
KS only (N=47)	47	0	41	3	3	0	44	1	2	8/47 (17%)
PCP only (N=54)	53	1	33	9	7	4	44	5	4	32/54 (59%)
Total (N=108)	107	1	79	12	11	5	95	6	6	43/108 (40%)

typical of KS, many such lesions have been initially overlooked. Other patients have been diagnosed by lymph-node biopsy after a prodrome consisting of fever, weight loss, and lymphadenopathy. Seven (13%) of fifty-four KS patients also had PCP. In many cases the histopathologic diagnosis from skin, lymph node, or visceral-lesion tissue has been difficult even in specialized hands.

The occurrence of *Pneumocystis carinii* pneumonia in patients who are not immunosuppressed due to known underlying disease or therapy is also highly unusual (*4*). Although 7 (11%) of the 61 patients with PCP also had KS, in many instances pneumonia preceded the tumor. Although most of the patients with PCP reported recent respiratory symptoms, some gave a history of weeks to months of systemic symptoms including weight loss and general malaise, similar to the prodrome described by patients who developed lymphadenopathic KS. Several of the patients with PCP had other serious infections, including gastrointestinal candidiasis, cryptococcal meningitis, and disseminated infections with Mycobacteriaceae and herpes simplex. Many of the PCP and KS patients have had positive cultures or serologic evidence of infection with cytomegalovirus.

The apparent clustering of both *Pneumocystis carinii* pneumonia and KS among homosexual men suggests a common underlying factor. Both diseases have been associated with host immunosuppression (*4-6*), and studies in progress are showing immunosuppression in some of these cases. The extent or cause of immune suppression is not known. Physicians should be aware of the possible occurrence of these diseases and other opportunistic infections, particularly among men with symptoms suggestive of these disorders or their prodromes, since therapy is specific and verification of the diagnosis requires biopsy.

Several state and local health departments and CDC are conducting active surveillance for KS, PCP, and opportunistic infections in persons without known predisposing underlying disease. A national case-control study will be implemented shortly.

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Persistent, Generalized Lymphadenopathy among Homosexual Males

Since October 1981, cases of persistent, generalized lymphadenopathy—not attributable to previously identified causes—among homosexual males have been reported to CDC by physicians in several major metropolitan areas in the United States. These reports were prompted by an awareness generated by ongoing CDC and state investigations of other emerging health problems among homosexual males (*1*).

In February and March 1982, records were reviewed for 57 homosexual men with lymphadenopathy seen at medical centers in Atlanta, New York City, and San Francisco. The cases reviewed met the following criteria: 1) lymphadenopathy of at least 3 months' duration, involving 2 or more extra-inguinal sites, and confirmed on physical examination by the patient's physician; 2) absence of any current illness or drug use known to cause lymphadenopathy; and 3) presence of reactive hyperplasia in a lymph node, if a biopsy was performed.

The 57 patients had a mean age of 33 years and the following characteristics: all were male; 81% were white, 15% black, and 4% Hispanic; 83% were single, 6% married, and 11% divorced; 86% were homosexual, 14% bisexual. The median duration of lymphadenopathy was 11 months. Ninety-five percent of patients had at least 3 node chains involved (usually cervical, axillary, and inguinal). Forty-three patients had had lymph node biopsies showing reactive hyperplasia. Approximately 70% of the patients had some constitutional symptoms including fatigue, 70%; fever, 49%; night sweats, 44%; and weight loss of ≥5 pounds, 28%. Hepatomegaly and/or splenomegaly was noted among 26% of patients.

Recorded medical histories for the 57 patients suggested that the use of drugs such as nitrite inhalants, marijuana, hallucinogens, and cocaine was common. Many of these patients have a history of sexually transmitted infections (gonorrhea 58%, syphilis 47%, and amebiasis 42%). Of 30 patients skin-tested for delayed hypersensitivity response, 8 were found to be anergic on the basis of at least 2 antigens other than purified protein derivative (PPD).

Immunologic evaluation performed at CDC for 8 of the above patients demonstrated abnormal T-lymphocyte helper-to-suppressor ratios (<0.9) for 2 patients. Since this review, immunologic evaluations at CDC of 13 additional homosexual males with lymphadenopathy from Atlanta and San Francisco revealed 6 with ratios of <0.9. The normal range of T-lymphocyte helper-to-suppressor ratios established in the CDC laboratory for healthy heterosexual patients is 0.9-3.5 (mean of 2.3). The normal range is being established for apparently healthy homosexual males.

Since the initiation of this study, 1 patient with lymphadenopathy has developed Kaposi's sarcoma.

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Editorial Note: The report above documents the occurrence of cases of unexplained, persistent, generalized lymphadenopathy among homosexual males. There are many known causes of generalized lymphadenopathy including viral infections (e.g., hepatitis B, infectious mononucleosis, cytomegalovirus infection, rubella), tuberculosis, disseminated *Mycobacterium avium-intracellulare*, syphilis, other bacterial and fungal infections, toxoplasmosis, connective tissue disorders, hypersensitivity drug reactions, heroin use, and neoplastic diseases (including leukemia and lymphoma) (*2*). Causes for the persistent lymphadenopathy among patients discussed above were sought but could not be identified.

This unexplained syndrome is of concern because of current reports of Kaposi's sarcoma (KS) and opportunistic infections (OI) that primarily involve homosexual males (*1,3*). Epidemiologic characteristics (age, racial composition, city of residence) of the homosexual patients with lymphadenopathy discussed here are similar to those of the homosexual KS/OI patients. Thirty-two (44%) of 73 Kaposi's sarcoma patients and 14 (23%) of 61 *Pneumocystis*

carinii pneumonia patients reported to CDC in the period mid-June 1981-January 1982 had a history of lymphadenopathy before diagnosis (*3*). *Mycobacterium avium-intracellulare* (an opportunistic agent) has been isolated from the lymph nodes of a homosexual patient (*4*). Moreover, the findings of anergy and depressed T-lymphocyte helper-to-suppressor ratios in some of the patients with lymphadenopathy suggest cellular immune dysfunction. Patients with KS/OI have had severe abnormalities of cellular immunity (*5,6*). The relationship between immunologic findings for patients with lymphadenopathy and patients with KS/OI remains to be determined.

Although these cases have been identified and defined on the basis of the presence of lymphadenopathy, this finding may be merely a manifestation of an underlying immunologic or other disorder that needs to be characterized further. Virologic and immunologic studies of many of these patients are currently under way. An analysis of trends in incidence for lymphadenopathy over the past several years is being conducted to determine whether this syndrome is new and whether homosexual males are particularly affected. Results of these studies and follow-up of these patients are necessary before the clinical and epidemiologic significance of persistent, generalized lymphadenopathy among homosexual males can be determined. Homosexual male patients with unexplained, persistent, generalized lymphadenopathy should be followed for periodic review.

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1982 June 4;31:277-79

Diffuse, Undifferentiated Non-Hodgkins Lymphoma among Homosexual Males — United States

A recent outbreak of Kaposi's sarcoma, *Pneumocystis carinii* pneumonia, and other opportunistic infections (KSOI) involving homosexual males and associated with an acquired cellular immunodeficiency syndrome has been described (*1,2*). While the pathogenesis of these disorders among homosexual males in San Francisco was being studied, 4 cases of diffuse, undifferentiated non-Hodgkins lymphoma (DUNHL) were diagnosed between March 1981 and January 1982. Because of the rarity of this malignancy and the potential relationship of these cases to the KSOI syndrome, they are reported here.

Patient 1: A 28-year-old hospital clerk complained of back and shoulder pain starting in early March 1981. Within a few days he had swelling of the right eye and an unsteady gait, and he was hospitalized on March 21. "Shotty" peripheral lymphadenopathy was present. A biopsy of an orbital mass and an enlarged cervical lymph node disclosed DUNHL. A myelogram revealed a T4-T6 block by an extradural mass. Radiation and chemotherapy led to complete remission. In September 1981, another tumor in the spinal cord was treated with radiation. The ensuing remission was temporary, and the patient died with disseminated DUNHL on January 15, 1982.

Patient 2: A 33-year-old nurse developed a tumor in his left lower jaw in October 1981. Penicillin was given for a suspected abscess, but the mass enlarged. A biopsy on November 24 disclosed DUNHL. Tumor cells contained surface IgM, kappa type, indicating a B-cell tumor. The tumor involved a left axillary lymph node, the retroperitoneum, the bone marrow, and the meninges. Generalized "reactive" lymphadenopathy and mild splenomegaly were present. Systemic and intrathecal chemotherapy led to temporary tumor regression; the patient relapsed and died in March 1982.

Patient 3: A 35-year-old janitor developed an enlarged cervical lymph node in October 1981. A dental extraction was performed for a suspected abscess, but lymphadenopathy persisted. A biopsy on December 12 revealed DUNHL. Tumor cells contained surface IgM, kappa type. Tumor was detected in the mediastinum, retroperitoneum, both kidneys, bone marrow, and meninges. Moderate generalized lymphadenopathy and splenomegaly were present. Systemic and intrathecal chemotherapy led to rapid tumor regression; however, this patient has recently relapsed.

Patient 4: A 24-year-old clerk developed backache and fatigue in November 1981. On January 21, 1982, an exploratory laparotomy showed DUNHL with extensive retroperitoneal involvement. Tumor cells contained surface IgM, kappa type. Combination chemotherapy has led to complete remission.

All these patients were homosexual males living in San Francisco. They had no known contact with each other, had no known sexual partners in common, and had no known contact with patients with Kaposi's sarcoma (KS). Each gave a history of a life style that included use of such drugs as nitrite inhalants, amphetamines, and marijuana. Medical histories indicated that all 4 patients had had 1 or more of such infections as hepatitis B, anal warts, gonorrhea, and syphilis. All patients had generalized lymphadenopathy, and 3 had splenomegaly of uncertain duration. Detailed virology and immunology studies are in progress.

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Editorial Note: Since July 1981, CDC has received reports of 162 cases of Kaposi's sarcoma among young homosexual males; the above report documents the possible appearance of a second unusual malignancy among this group of young males—i.e., DUNHL, a B-cell lymphoma (*3*).

The difficulty in distinguishing DUNHL histologically from Burkitt's lymphoma (BL) (*3*), a tumor often associated with Epstein-Barr virus, and the lack of consensus on the classification of non-Hodgkin's lymphoma (NHL) (*4*) make the precise determination of incidence difficult. About 0.7%-2.4% of all cases of NHL are DUNHL (*4,5*)—for a crude incidence rate of 0.06-0.21/100,000 population/year. No cases of DUNHL and only 1 case of BL were reported in 1977-1980 among 20-39 year olds to the Surveillance Epidemiology and End Results Cancer Registry in the San Francisco-Oakland-Standard Metropolitan Statistical Area, emphasizing the unusual occurrence of 4 cases within 10 months in the San Francisco homosexual male population. CDC has also recently received a report from Chicago of another case of DUNHL affecting a young homosexual male.

Underlying immune deficiency appears to be the common denominator for the development of the opportunistic infections and tumors associated with the KSOI syndrome (*6-8*). A similar syndrome, with an increased risk for NHL but a different time course and spectrum of opportunistic diseases, appears among renal allograft recipients (*4,9*). Lymphoreticular tumors also occur much more frequently among patients with primary immunodeficiency disorders (*4*). The cause of the acquired cellular immunodeficiency among homosexual males is being studied.

This report of DUNHL suggests that more than one kind of tumor may occur in association with the KSOI syndrome; assessment of these patients' immunologic findings will help to document the relationship between such tumors and the KSOI syndrome. The full range of potential outcomes (i.e., opportunistic tumors and infections) is probably only now being elucidated. There have also been recent case reports of other malignancies affecting the homosexual population, including carcinoma of the anal rectum (*10*) and squamous cell carcinoma of the oral cavity (*11,12*). The excess of carcinoma of the anus and anal rectum appears to antedate the onset of KSOI syndrome (*13*). The relationship between these malignancies and the KSOI syndrome is uncertain.

Many homosexual males with persistent, unexplained, generalized lymphadenopathy and biopsies reportedly demonstrating only reactive hyperplasia have also been reported to CDC and are under active investigation (*14*). Homosexual males with clinical findings similar to DUNHL or lymphadenopathic KS (*15*) should be carefully evaluated and followed.

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1982 June 11;31:294–301

Update on Kaposi's Sarcoma and Opportunistic Infections in Previously Healthy Persons — United States

Between June 1, 1981, and May 28, 1982, CDC received reports of 355 cases* of Kaposi's sarcoma (KS) and/or serious opportunistic infections (OI), especially *Pneumocystis carinii* pneumonia (PCP), occurring in previously healthy persons between 15 and 60 years of age. Of the 355, 281 (79%) were homosexual (or bisexual) men, 41 (12%) were heterosexual men, 20 (6%) were men of unknown sexual orientation, and 13 (4%) were heterosexual women. This proportion of heterosexuals (16%) is higher than previously described (*1*).

Five states—California, Florida, New Jersey, New York, and Texas—accounted for 86% of the reported cases. The rest were reported by 15 other states. New York was reported as the state of residence for 51% of homosexual male patients, 49% of the heterosexual males, and 46% of the females. The median age at onset of symptoms was 36.0 years for homosexual men, 31.5 years for heterosexual men, and 29.0 years for women. The distribution of homosexual and heterosexual KSOI cases by date of onset is shown in Figure 2. Overall, 69% of all reported cases have had onset after January 1, 1981.

PCP accounted for a significantly higher proportion of the diagnoses for both male (63%) and female (73%) heterosexual patients than for homosexual patients (42%) ($p<0.05$). The ratio of homosexual to heterosexual males with PCP only, by year of onset of symptoms, was 5:1 in 1980, 3:1 in 1981 and 4:1 thus far in 1982. Reported case-fatality ratios for PCP cases with onset in 1980 and 1981 were 85% and 47%, respectively, for homosexual men and 67% and 41% for heterosexual men. The distribution of PCP cases by diagnosis, sexual orientation, race, and overall case-fatality ratio is shown in Table 1.

Both male and female heterosexual PCP patients were more likely than homosexual patients to be black or Hispanic ($p=0.0001$). Of patients with PCP for whom drug-use information was known, 14% of homosexual men had used intravenous drugs at some time compared with 63% of heterosexual men ($p=0.001$) and 57% of heterosexual women ($p=0.001$)(Table 1).

Reported by Task Force on Kaposi's Sarcoma and Opportunistic Infections, Field Svcs Div, Epidemiology Program Office, CDC.

Editorial Note: Sexual orientation information was obtained from patients by their physicians, and the accuracy of reporting cannot be determined; therefore, comparisons between KSOI cases made on the basis of sexual orientation must be interpreted cautiously. Similarities between homosexual and heterosexual cases in diagnoses and geographic and temporal distribution suggest that all are part of the same epidemic. Masur et al (*2*) also reported that lymphocyte dysfunction and lymphopenia were similar in heterosexual and homosexual cases of PCP. However, differences in race, proportion of PCP cases, and intravenous drug use suggest that risk factors may be different for these groups. A laboratory and interview study of heterosexual patients with diagnosed KS, PCP, or other OI is in progress to determine whether their cellular immune function, results of virologic studies, medical history, sexual practices, drug use, and life-style are similar to those of homosexual patients.

*A case is defined as illness in a person who 1) has either biopsy-proven KS or biopsy- or culture-proven, life-threatening opportunistic infection, 2) is under age 60, and 3) has no history of either immunosuppressive underlying illness or immunosuppressive therapy.

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FIGURE 2. Cases of KSOI by specific diagnosis, year of onset, sex, and sexual orientation, United States, 1978-1982

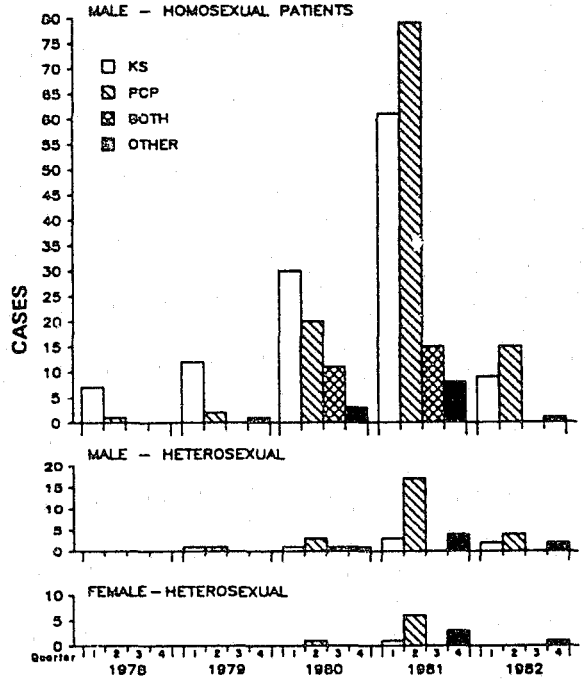

TABLE 1. Reported cases of *Pneumocystis carinii* pneumonia in previously healthy persons, June 1, 1981-May 28, 1982, United States

	Race					
	Total	White	Black	Hispanic	Case-fatality ratio	IV-Drug Use†
Homosexual men*	118	80	22	15	51%	11/80 (14%)
Heterosexual men*	26	8	11	6	35%	17/26 (65%)
Heterosexual women*	8	1	4	2	50%	4/7 (57%)

*Race data lacking for 1 case
†Data not available on all cases

1982 June 18;31:305–7

A Cluster of Kaposi's Sarcoma and *Pneumocystis carinii* Pneumonia among Homosexual Male Residents of Los Angeles and Orange Counties, California

In the period June 1, 1981-April 12, 1982, CDC received reports of 19 cases of biopsy-confirmed Kaposi's sarcoma (KS) and/or *Pneumocystis carinii* pneumonia (PCP) among previously healthy homosexual male residents of Los Angeles and Orange counties, California. Following an unconfirmed report of possible associations among cases in southern California, interviews were conducted with all 8 of the patients still living and with the close friends of 7 of the other 11 patients who had died.

Data on sexual partners were obtained for 13 patients, 8 with KS and 5 with PCP. For any patient to be considered as a sexual contact of another person, the reported exposures of that patient had to be either substantiated or not denied by the other person involved in the relationship (or by a close friend of that person).

Within 5 years of the onset of symptoms, 9 patients (6 with KS and 3 with PCP) had had sexual contact with other patients with KS or PCP. Seven patients from Los Angeles County had had sexual contact with other patients from Los Angeles County, and 2 from Orange County had had sexual contact with 1 patient who was not a resident of California. Four of the 9 patients had been exposed to more than 1 patient who had KS or PCP. Three of the 6 patients with KS developed their symptoms after sexual contact with persons who already had symptoms of KS. One of these 3 patients developed symptoms of KS 9 months after sexual contact, another patient developed symptoms 13 months after contact, and a third patient developed symptoms 22 months after contact.

The other 4 patients in the group of 13 had no known sexual contact with reported cases. However, 1 patient with KS had an apparently healthy sexual partner in common with 2 persons with PCP; 1 patient with KS reported having had sexual contact with 2 friends of the non-Californian with KS; and 2 patients with PCP had most of their anonymous contacts (≥80%) with persons in bathhouses attended frequently by other persons in Los Angeles with KS or PCP.

The 9 patients from Los Angeles and Orange counties directly linked to other patients are part of an interconnected series of cases that may include 15 additional patients (11 with KS and 4 with PCP) from 8 other cities. The non-Californian with KS mentioned earlier is part of this series. In addition to having had sexual contact with 2 patients with KS from Orange County, this patient said he had sexual contact with 1 patient with KS and 1 patient with PCP from New York City and 2 of the 3 patients with PCP from Los Angeles County.

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Editorial Note: An estimated 185,000-415,000 homosexual males live in Los Angeles County.* Assuming that they had a median of 13.5 to 50 different sexual partners per year over the past 5 years,† the probability that 7 of 11 patients with KS or PCP would have sexual contact with any one of the other 16 reported patients in Los Angeles County would seem to be remote. The probability that 2 patients with KS living in different parts of Orange County would have sexual contact with the same non-Californian with KS would appear to be even lower. Thus, observations in Los Angeles and Orange counties imply the existence of an unexpected cluster of cases.

The cluster in Los Angeles and Orange counties was identified on the basis of sexual contact. One hypothesis consistent with the observations reported here is that infectious agents are being sexually transmitted among homosexually active males. Infectious agents not yet identified may cause the acquired cellular immuno-

*Estimates of the homosexual male population are derived from Kinsey *et al.*(*1*) who reported that 8% of adult males are exclusively homosexual and that 18% have at least as much homosexual as heterosexual experience for at least 3 years between the ages of 16 and 55 years; and the U. S. Bureau of the Census, which reported that approximately 2,304,000 males between the ages of 18 and 64 years lived in Los Angeles County in 1980.

†Estimates of sexual activity are derived from data collected by Jay and Young (2), indicating that 130 homosexual male respondents in Los Angeles had a median of 13.5 different sexual partners in 1976, and from CDC data showing that 13 patients with KS and/or PCP in the Los Angeles area tended to report having more sexual partners in the year before onset of symptoms (median=50) than did homosexual males surveyed by Jay and Young.

deficiency that appears to underlie KS and/or PCP among homosexual males (*3-6*). If infectious agents cause these illnesses, sexual partners of patients may be at increased risk of developing KS and/or PCP.

Another hypothesis to be considered is that sexual contact with patients with KS or PCP does not lead directly to acquired cellular immunodeficiency, but simply indicates a certain style of life. The number of homosexually active males who share this lifestyle may be much smaller than the number of homosexual males in the general population.

Exposure to some substance (rather than an infectious agent) may eventually lead to immunodeficiency among a subset of the homosexual male population that shares a particular style of life. For example, Marmor et al. recently reported that exposure to amyl nitrite was associated with an increased risk of KS in New York City (*7*). Exposure to inhalant sexual stimulants, central-nervous-system stimulants, and a variety of other "street" drugs was common among males belonging to the cluster of cases of KS and PCP in Los Angeles and Orange counties.

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1982 July 9;31:353–61

Opportunistic Infections and Kaposi's Sarcoma among Haitians in the United States

Reports of opportunistic infections and Kaposi's sarcoma among Haitians residing in the United States have recently been received at CDC. A total of 34 cases in 5 states have been reported to date.

Florida: From April 1, 1980, through June 20, 1982, 19 Haitian patients admitted to Jackson Memorial Hospital, Miami, had culture, biopsy, or autopsy evidence of opportunistic infections, and 1 other patient had biopsy- and autopsy-confirmed Kaposi's sarcoma. The infections identified included *Pneumocystis carinii* pneumonia (6 patients), cryptococcal meningitis or fungemia (4), toxoplasmosis of the central nervous system (CNS) (7), *Candida albicans* esophagitis (7) and thrush (5), esophageal or disseminated cytomegalovirus infection (3), progressive herpes simplex virus infection (1), disseminated tuberculosis (8), and chronic enteric *Isospora belli* infection (2). Fourteen patients had multiple opportunistic infections. Three patients had recurring infection. The clinical course has been severe; 10 patients have died. The type of infection was initially recognized at autopsy for 6 patients.

The 20 patients ranged in age from 22 to 43 years (mean 28.4 years); 17 were males. All the patients had been born in Haiti and had resided in the Miami-Dade County area for periods ranging from 1 month to 7 years (median 20.5 months).

When initially seen, 18 of the 20 patients had peripheral lymphopenia (<1,000 lymphocytes/mm^3). Skin tests performed on 17 patients with various combinations of tuberculin, mumps, streptokinase/streptodornase, *Candida*, and *Trichophyton* antigens were all negative. Immunologic studies at CDC on specimens from the 11 patients tested showed severe T-cell dysfunction. Monoclonal antibody analysis of peripheral-blood T-cell subsets revealed a marked decrease of the T-helper cell subset with inversion of the normal ratio of T-helper to T-suppressor cells.

Of the 7 patients with histologically confirmed toxoplasmosis of the CNS, 5 have died. Because there was no history of underlying conditions or drugs associated with immunosuppression, CNS toxoplasmosis was not considered in the premortem diagnosis of the first 4 cases. Pathology findings for all these patients were confirmed with an immuno-peroxidase method

for toxoplasmosis and, in one instance, with electron microscopy as well. Tachyzoites were the predominant form of the parasite observed; encysted forms were rare or absent in many tissue blocks.

In addition to the 20 cases reported from Miami, a Haitian female from Naples, Florida, was reported to have *P. carinii* pneumonia.

New York: From July 1, 1981, through May 31, 1982, 10 Haitian residents of Brooklyn were diagnosed as having the following opportunistic infections: *P. carinii* pneumonia (5 patients), CNS toxoplasmosis (2), disseminated cryptococcosis (1), esophageal candidiasis (1), and disseminated tuberculosis (2). None had any underlying disease or history of therapy known to cause immunosuppression. Five died of their infections.

All 10 patients were males and ranged in age from 22 to 37 years. Eight stated they were heterosexual; the sexual orientation of the other 2 was not known. One patient gave a history of intravenous (IV) drug abuse; 8 denied drug abuse, and for 1, no information was available on drug use. The 10 had resided in the United States for periods ranging from 3 months to 8 years (the majority, for 2 years or less). At least 1 patient had onset of illness before arriving in the United States. Immunologic studies performed at CDC on specimens from 2 patients showed results comparable to those for the 11 patients from Miami.

Other States: Opportunistic infections or Kaposi's sarcoma were also reported for 3 other Haitians located in California, Georgia, and New Jersey. All 3 were heterosexual males who denied IV drug abuse. One patient had *P. carinii* pneumonia, another had Kaposi's sarcoma, and the third had esophageal candidiasis.

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Editorial Note: The occurrence of severe opportunistic infections among 32 Haitians recently entering the United States is a new phenomenon. The in vitro immunologic findings and the high mortality rate (nearly 50%) for these patients are similar to the pattern recently described among homosexual males and IV drug abusers (*1-4*). None of the 23 Haitian males questioned reported homosexual activity, and only 1 of 26 gave a history of IV drug abuse—substantially lower than the prevalence reported for heterosexual patients of other racial/ethnic groups who had Kaposi's sarcoma or opportunistic infections. Of the 34 patients discussed above with opportunistic infections or Kaposi's sarcoma, 30 (88%) were males. All patients were between 20 and 45 years of age. Data from medical screening of 10,780 Haitians entering the United States between March and November 1980 indicated that 73% were adult males. Only 2% of those screened were <12 years old, and over 90% were <45 years old (*5*).

The occurrence of opportunistic infections among adult Haitians with no history of underlying immunosuppressive therapy or disease has not been reported previously. However, 11 cases of disseminated Kaposi's sarcoma have been diagnosed by dermatologists in Port au Prince, Haiti, over a period of 2 1/2 years (*6*). The reason for the high prevalence of disseminated tuberculosis among the group of patients discussed above is not known; but a high prevalence of tuberculosis has been documented among recent Haitian entrants (*7*), and the disease has been reported to disseminate more frequently among persons who are immunocompromised (*8,9*).

To date, it has not been established whether the cases of toxoplasmosis represent reactivation of old lesions acquired in Haiti or whether they are progressive primary infections acquired in the United States. However, serum specimens obtained from 2 patients in Miami and tested at CDC by indirect immuno-fluorescence (IIF) were negative for IgM antibody to *Toxoplasma*. This suggests that the infections of these 2 patients were not recently acquired. Serologic tests such as the IIF may be helpful in establishing or excluding a diagnosis of toxoplasmosis for patients with CNS symptoms. Tachyzoites in tissue specimens can be visualized more effectively using Giemsa stain or a recently developed immuno-peroxidase method (*10*) than with the standard hemotoxylin and eosin staining.*

*See erratum on page 176.

1982 July 16;31:365–7

Pneumocystis carinii Pneumonia among Persons with Hemophilia A

CDC recently received reports of three cases of *Pneumocystis carinii* pneumonia among patients with hemophilia A and without other underlying disease. Two have died; one remains critically ill. All three were heterosexual males; none had a history of intravenous (IV) drug abuse. All had lymphopenia, and the two patients who were specifically tested have had *in vitro* laboratory evidence of cellular immune deficiency. The case reports follow.

Patient 1: A 62-year-old resident of Westchester County, New York, with a history of chronic hepatitis had received frequent injections of Factor VIII concentrate for severe hemophilia for many years. In February 1981, he began to experience weight loss and vague right upper quadrant abdominal discomfort associated with laboratory evidence of increasing hepatic dysfunction. In December 1981, while hospitalized in Miami, Florida, for elective knee surgery, he complained of cough and fever. He was lymphopenic, and chest X-ray revealed interstitial infiltrates compatible with viral pneumonia. He was discharged in late December after a brief course of corticosteroids associated with overall clinical improvement. He returned in severe respiratory distress a few days later. Open lung biopsy on January 5 revealed *P. carinii,* for which he received sulfamethoxazole/trimethoprim (SMZ/TMP) during the 2 weeks before death. *P. carinii* pneumonia and micronodular cirrhosis were documented at post-mortem examination.

Patient 2: A 59-year-old lifelong resident of Denver, Colorado, noted the onset of gradual weight loss, dysphagia associated with pharyngitis, aphthous-like ulcers, and anterior cervical adenopathy beginning in October 1980. As a patient with severe hemophilia, he had received frequent injections of Factor VIII concentrate for several years. Weight loss continued over a period of months. Oropharyngeal candidiasis was diagnosed in February 1982. He was hospitalized in May 1982 with symptoms including nausea, vomiting, and recurrent fever. Pneumonia was diagnosed, and *P. carinii* and cytomegalovirus (CMV) were repeatedly identified from lung tissue or bronchial secretions using histopathologic and culture techniques. Therapy with SMZ/TMP and pentamidine isethionate continued until death on July 5, 1982. Laboratory evidence for cellular immune dysfunction included absent mitogen responses and depletion of the T-helper lymphocyte cell population, relative increase in T-suppressor cells, and resultant inverted T-helper/T-suppressor ratio.

Patient 3: A previously healthy 27-year-old lifelong resident of northeastern Ohio developed fever, urinary frequency and urgency, and extreme lassitude in July 1981. He had frequently received parenteral Factor VIII concentrate for severe hemophilia. Bilateral pneumonia was diagnosed in October 1981, and open lung biopsy revealed *P. carinii.* He responded successfully to a 3-week course of SMZ/TMP. In February 1982, he received ketoconazole to suppress repeated episodes of oral candidiasis. He was hospitalized again in April with fever, splenomegaly, anemia, and lymphopenia. An extensive tumor work-up (including laparotomy) did not uncover an underlying malignancy. Cultures of bone marrow, liver, mesenteric lymph nodes, and blood grew *Mycobacterium avium. In vitro* immunological testing in March indicated a reduction in absolute number of circulating T-cells. Subsequent, more extensive testing documented the lack of lymphocyte responsiveness to mitogens, absolute and relative decrease in T-helper cells, relative increase in T-suppressor cells, and resultant inverted T-helper/T-suppressor ratio.

For each patient, records of the administration of Factor VIII concentrate were reviewed to determine manufacturer and lot numbers. No two of the patients are known to have received concentrate from the same lots.

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Editorial Note: *Pneumocystis carinii* pneumonia has not been previously reported among hemophilia patients who have had no other underlying diseases and have not had therapy commonly associated with immunosuppression. A review of the Parasitic Disease Drug Service's records of requests for pentamidine isethionate for 1980-1982 failed to identify hemophilia among the underlying disorders of patients for whom pentamidine was requested for *Pneumocystis carinii* therapy.

The clinical and immunologic features these three patients share are strikingly similar to those recently observed among certain individuals from the following groups: homosexual males, heterosexuals who abuse IV drugs, and Haitians who recently entered the United States.(*1-3*) Although the cause of the severe immune dysfunction is unknown, the occurrence among the three hemophiliac cases suggests the possible transmission of an agent through blood products.

Hemophilia A is a sex-linked, inherited disorder characterized by a deficiency in Factor VIII activity. There are an estimated 20,000 patients with hemophilia A in the United States (*4*). Severity of disease is classified according to percentage of endogenous Factor VIII activity. Approximately 60% of the 20,000 are classified as severe, and 40% are classified as moderate (*4*). Factor VIII deficiency can be treated with intravenous administration of exogenous Factor VIII as either cryoprecipitate made from individual units of fresh frozen plasma or lyophilized Factor VIII concentrate manufactured from plasma pools collected from as many as a thousand or more donors.

CDC has notified directors of hemophilia centers about these cases and, with the National Hemophilia Foundation, has initiated collaborative surveillance. A Public Health Service advisory committee is being formed to consider the implication of these findings. Physicians diagnosing opportunistic infections in hemophilia patients who have not received antecedent immunosuppressive therapy are encouraged to report them to the CDC through local and state health departments.

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1982 Sept 3;31:465—67

Hepatitis B Virus Vaccine Safety: Report of an Inter-Agency Group

On June 25, 1982, the Immunization Practices Advisory Committee (ACIP) recommended using inactivated hepatitis B virus (HBV) vaccine for individuals who are at high risk for HBV infection because of their geographic origins, life styles, or exposures to HBV at home or work (*1*). The recommendations included statements on vaccine efficacy and safety. However, requests for additional information on safety continue to be received, primarily because of the plasma origins of the antigen used to prepare the vaccine. In response to these requests, the Inter-Agency Group to Monitor Vaccine Development, Production, and Usage, with representatives from the Centers for Disease Control (CDC), Food and Drug Administration (FDA), and National Institutes of Health (NIH), has further reviewed the available data. Its conclusions on vaccine production and safety evaluation follow.

HBV vaccine licensed in the United States is prepared from human plasma containing hepatitis surface antigen (HBsAg) (*2*). Hypothetical side effects from the vaccine include reactions to blood substances or to infectious agents present in donor plasma. In trials involving approximately 1900 persons, reactions among vaccine recipients were compared with reactions among placebo recipients, and only minor immediate complaints, primarily of soreness at the injection site, were observed (*3,4*). Infectious agents that might be present in donor plasma are most likely to be viruses. Virus transmission by blood or blood products requires the virus to circulate in plasma or in cellular elements such as leukocytes. The chance of virus transmission increases with the duration of the viremic state. HBV is the only well-characterized extra-cellular human virus with a prolonged carrier state. Other agents, presumably viruses, which remain unidentified despite their common association with post-transfusion hepatitis, are responsible for non-A/non-B hepatitis.

Beginning in 1978, a disease or group of diseases was recognized, manifested by Kaposi's sarcoma and opportunistic infections, associated with a specific defect in cell-mediated immunity. This group of clinical entities, along with its specific immune deficiency, is now called acquired immune deficiency syndrome (AIDS). The epide-

miology of AIDS suggests an unidentified and uncharacterized blood-borne agent as a possible cause of the underlying immunologic defect (*5-7*). Because AIDS occurs among populations that are sources of HBV-positive plasma, this syndrome should be considered in regard to the inherent safety of HBV vaccine.

Vaccine plasma donors are screened, and only healthy individuals (HBsAg positive) are selected. The plasmapheresis centers are licensed and inspected by the FDA. A physician gives each donor a complete physical examination, which includes a history and suitable laboratory tests. At the time of each donation, the donor's hemoglobin, hematocrit, and serum protein levels must be within normal limits. HBsAg-positive donors' levels of serum aminotransferase activity are permitted to exceed those limits set for otherwise healthy donors, but they must be stable.

The process for producing each lot of licensed HBV vaccine is designed to remove or inactivate infectious HBV and other viruses from the desired immunogen, the 22 nm HBsAg particle. The process relies on both biophysical elimination of infectious particles and treatments which inactivate viruses (pepsin at pH 2, 8M urea, and formalin). The elimination of infectious virus by biophysical purification depends on the density and flotational property of HBsAg in contrast with those of infectious virus particles. The double ultracentrifugation process (isopyknic and rate zonal) has been proven effective in removing 10^4 infectious doses of HBV/ml, as measured by chimpanzee inoculation (*8*). Pepsin treatment alone (1 μg/ml, pH 2.0, 37 C for 18 hours) inactivates 10^5 or more infectious doses of HBV/ml, as measured by chimpanzee inoculation, and has been shown to inactivate viruses in the rhabdovirus, poxvirus, togavirus, reovirus, herpesvirus and coronavirus groups (*9,10*). Urea treatment alone (8M, 37 C for four hours) inactivates 10^5 or more infectious doses of HBV/ml and has been shown to inactivate viruses in the rhabdovirus, myxovirus, poxvirus, togavirus, reovirus, picornavirus, herpesvirus, and coronavirus groups (*9*). Slow viruses, characterized by the viruses of kuru and Creutzfeld-Jakob disease, are inactivated by 6M urea, a lesser concentration than that routinely applied to the HBV vaccine (*11*). Formalin alone inactivates HBV (*9*), as well as many other virus groups, including parvoviruses (*12*), retroviruses (*13,14*) and the delta agent (*15*).

Each lot of HBV vaccine is tested for sterility, innocuousness in animals, and pyrogenicity and is free of detectable viruses, as shown by inoculation into both human and monkey cell-culture systems. Additionally, 22 doses of each vaccine lot are inoculated intravenously into four chimpanzees.

United States licensed vaccine (produced by Merck, Sharp, and Dohme) has been given to over 19,000 persons, 6,000 of whom received vaccine between October 1975 and December 1981 and 13,000 of whom received it in 1982. The vaccine has been demonstrated to protect recipients from HBV infection (*3,4*), and no evidence of hepatitis has been observed as a result of HBV vaccination. Also, studies by CDC, FDA, and others of aminotransferase levels in chimpanzees and humans confirm that HBV vaccine does not transmit the non-A/non-B agent(s).

In three vaccine-placebo trials (two among homosexual men between 1978 and 1980 [*3,4*] and one among hospital employees in 1981), 549, 714, and 664 persons, respectively, received vaccine, and equal numbers received placebo. Follow-up surveillance of participants in these studies was 24, 15, and 18 months, respectively, after the first dose of vaccine with no cases of AIDS being reported. In addition to the vaccine/placebo trials, 17,602 persons (including 8,941 health-care workers and 5,985 healthy adults, children, and infants from non-high-risk group settings) have received Merck HBV vaccine in various study settings. Periods of follow-up of these vaccine recipients have ranged from a few months to over 7 years. However, lots used in early studies may have been produced before the occurrence of AIDS. Some of the groups from which HBV vaccine is prepared or for which it is recommended are also at high risk for AIDS; therefore reports of AIDS among donors and vaccinees at some future time may be expected on the basis of chance alone.

To summarize, these findings support the ACIP statement on hepatitis vaccine: 1) immediate side effects are minimal after receipt of HBV vaccine; 2) no long-term reac-

tions have been reported; 3) the purification and inactivation process is known to inactivate representatives of all known groups of animal viruses; 4) each lot is safety tested in primates; 5) no known cases of hepatitis B or non-A/non-B hepatitis have been transmitted by the vaccine and no known occurrence of AIDS has been associated with the vaccine.

Reported by the Inter-Agency Group to Monitor Vaccine Development, Production, and Usage, represented by the Centers for Disease Control, Food and Drug Administration, and National Institutes of Health.

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Update on Acquired Immune Deficiency Syndrome (AIDS) — United States

Between June 1, 1981, and September 15, 1982, CDC received reports of 593 cases of acquired immune deficiency syndrome (AIDS).* Death occurred in 243 cases (41%).

Analysis of reported AIDS cases shows that 51% had *Pneumocystis carinii* pneumonia (PCP) without Kaposi's sarcoma (KS) (with or without other "opportunistic" infections [OOI] predictive of cellular immunodeficiency); 30% had KS without PCP (with or without OOI); 7% had both PCP and KS (with or without OOI); and 12% had OOI with neither PCP nor KS. The overall mortality rate for cases of PCP without KS (47%) was more than twice that for cases of KS without PCP (21%), while the rate for cases of both PCP and KS (68%) was more than three times as great. The mortality rate for OOI with neither KS nor PCP was 48%.

The incidence of AIDS by date of diagnosis (assuming an almost constant population at risk) has roughly doubled every half-year since the second half of 1979 (Table 1). An average of one to two cases are now diagnosed every day. Although the overall case-mortality rate for the current total of 593 is 41%, the rate exceeds 60% for cases diagnosed over a year ago.

Almost 80% of reported AIDS cases in the United States were concentrated in six metropolitan areas, predominantly on the east and west coasts of the country (Table 2). This distribution was not simply a reflection of population size in those areas; for example, the number of cases per million population reported from June 1, 1981, to September 15, 1982, in New York City and San Francisco was roughly 10 times greater than that of the entire country. The 593 cases

*Formerly referred to as Kaposi's sarcoma and opportunistic infections in previously healthy persons. (1)

were reported among residents of 27 states and the District of Columbia, and CDC has received additional reports of 41 cases from 10 foreign countries.

Approximately 75% of AIDS cases occured among homosexual or bisexual males (Table 3), among whom the reported prevalence of intravenous drug abuse was 12%. Among the 20% of known heterosexual cases (males and females), the prevalence of intravenous drug abuse was about 60%. Haitians residing in the United States constituted 6.1% of all cases (*2*), and 50% of the cases in which both homosexual activity and intravenous drug abuse were denied. Among the 14 AIDS cases involving males under 60 years old who were not homosexuals, intravenous drug abusers, or Haitians, two (14%) had hemophilia A.[†] (*3*)

Reported AIDS cases may be separated into groups based on these 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—0.3%, and persons in none of the other groups—5%.

Reported by the Task Force on Acquired Immune Deficiency Syndrome, CDC

Editorial Note: CDC defines a case of AIDS as a disease, at least moderately predictive of a defect in cell-mediated immunity, occurring in a person with no known cause for diminished resistance to that disease. Such diseases include KS, PCP, and serious OOI.[§] Diagnoses are considered to fit the case definition only if based on sufficiently reliable methods (generally histology or culture). However, this case definition may not include the full spectrum of AIDS manifestations, which may range from absence of symptoms (despite laboratory evidence of immune deficiency) to non-specific symptoms (e.g., fever, weight loss, generalized, persistent lymphadenopathy) (*4*) to specific diseases that are insufficiently predictive of cellular immunodeficiency to be included in incidence monitoring (e.g., tuberculosis, oral candidiasis, herpes zoster) to malignant neoplasms that cause, as well as result from, immunodeficiency[¶] (*5*). Conversely, some patients who are considered AIDS cases on the basis of diseases only moderately predictive of cellular immunodeficiency may not actually be immunodeficient and may not be part of the current epidemic. Absence of a reliable, inexpensive, widely available test for AIDS, however, may make the working case definition the best currently available for incidence monitoring.

Two points in this update deserve emphasis. First, the eventual case-mortality rate of AIDS, a few years after diagnosis, may be far greater than the 41% overall case-mortality rate noted above. Second, the reported incidence of AIDS has continued to increase rapidly. Only a small percentage of cases have none of the identified risk factors (male homosexuality, intravenous drug abuse, Haitian origin, and perhaps hemophilia A). To avoid a reporting bias, physicians should report cases regardless of the absence of these factors.

TABLE 1. Reported cases and case-mortality rates of AIDS, by half-year of diagnosis,* 1979-1982, (as of September 15, 1982) — United States

Half-year of diagnosis		Cases	Deaths	Case-mortality rate (%)
1979	1st half	1	1	100
	2nd half	6	5	83
1980	1st half	17	13	76
	2nd half	26	22	85
1981	1st half	66	46	70
	2nd half	141	79	56
1982	1st half	249	67	27

*Excluding 4 cases with unknown dates of diagnosis

[†]A third hemophiliac with pneumocystosis exceeded the 60-year age limit of the AIDS case definition.

[§]These infections include pneumonia, meningitis, or encephalitis due to one or more of the following: aspergillosis, candidiasis, cryptococcosis, cytomegalovirus, nocardiosis, strongyloidosis, toxoplasmosis, zygomycosis, or atypical mycobacteriosis (species other than tuberculosis or lepra); esophagitis due to candidiasis, cytomegalovirus, or herpes simplex virus; progressive multifocal leukoencephalopathy; chronic enterocolitis (more than 4 weeks) due to cryptosporidiosis; or unusually extensive mucocutaneous herpes simplex of more than 5 weeks duration.

[¶]CDC encourages reports of any cancer among persons with AIDS and of selected rare lymphomas (Burkitt's or diffuse, undifferentiated non-Hodgkins lymphoma) among persons with a risk factor for AIDS. This differs from the request for reports of AIDS cases regardless of the absence of risk factors.

Physicians aware of patients fitting the case definition for AIDS are requested to report such cases to CDC through their local or state health departments.

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TABLE 2. AIDS cases per million population,* by standard metropolitan statistical area (SMSA) of residence, reported from June 1, 1981 to September 15, 1982 — United States

SMSA of residence	Cases	Percentage of total	Cases per million population
New York, N.Y.	288	48.6	31.6
San Francisco, Calif.	78	13.2	24.0
Miami, Fla.	31	5.2	19.1
Newark, N.J.	15	2.5	7.6
Houston, Texas	15	2.5	5.2
Los Angeles, Calif.	37	6.2	4.9
Elsewhere (irrespective of SMSA)	129	21.8	0.6
Total	593	100.0	2.6

*From the 1980 Census

TABLE 3. Cases of AIDS, by sexual orientation and intravenous drug abuse, reported from June 1, 1981, to September 15, 1982 — United States

Sex	Sexual orientation	Cases	Percentage distribution by sexual orientation	Intravenous drug abuse*			Percentage using IV drugs†
				Yes	No	Unknown	
Male	Homosexual or bisexual	445	75.0	42	300	103	12.3
	Heterosexual	84	14.2	49	33	2	59.8
	Unknown	30	5.1	11	11	8	50.0
Female	Heterosexual	34	5.7	20	12	2	62.5
Total		593	100.0	122	356	115	25.5

*Regardless of when the last such activity occurred.

†Excluding cases with unknown history of IV drug abuse.

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Acquired Immune Deficiency Syndrome (AIDS): Precautions for Clinical and Laboratory Staffs

The etiology of the underlying immune deficiencies seen in AIDS cases is unknown. One hypothesis consistent with current observations is that a transmissible agent may be involved. If so, transmission of the agent would appear most commonly to require intimate, direct contact involving mucosal surfaces, such as sexual contact among homosexual males, or through parenteral spread, such as occurs among intravenous drug abusers and possibly hemophilia patients using Factor VIII products. Airborne spread and interpersonal spread through casual contact do not seem likely. These patterns resemble the distribution of disease and modes of spread of hepatitis B virus, and hepatitis B virus infections occur very frequently among AIDS cases.

There is presently no evidence of AIDS transmission to hospital personnel from contact with affected patients or clinical specimens. Because of concern about a possible transmissible agent, however, interim suggestions are appropriate to guide patient-care and laboratory personnel, including those whose work involves experimental animals. At present, it appears

prudent for hospital personnel to use the same precautions when caring for patients with AIDS as those used for patients with hepatitis B virus infection, in which blood and body fluids likely to have been contaminated with blood are considered infective. Specifically, patient-care and laboratory personnel should take precautions to avoid direct contact of skin and mucous membranes with blood, blood products, excretions, secretions, and tissues of persons judged likely to have AIDS. The following precautions do not specifically address outpatient care, dental care, surgery, necropsy, or hemodialysis of AIDS patients. In general, procedures appropriate for patients known to be infected with hepatitis B virus are advised, and blood and organs of AIDS patients should not be donated.

The precautions that follow are advised for persons and specimens from persons with: opportunistic infections that are not associated with underlying immunosuppressive disease or therapy; Kaposi's sarcoma (patients under 60 years of age); chronic generalized lymphadenopathy, unexplained weight loss and/or prolonged unexplained fever in persons who belong to groups with apparently increased risks of AIDS (homosexual males, intravenous drug abusers, Haitian entrants, hemophiliacs); and possible AIDS (hospitalized for evaluation). Hospitals and laboratories should adapt the following suggested precautions to their individual circumstances; these recommendations are not meant to restrict hospitals from implementing additional precautions.

A. The following precautions are advised in providing care to AIDS patients:

1. Extraordinary care must be taken to avoid accidental wounds from sharp instruments contaminated with potentially infectious material and to avoid contact of open skin lesions with material from AIDS patients.
2. Gloves should be worn when handling blood specimens, blood-soiled items, body fluids, excretions, and secretions, as well as surfaces, materials, and objects exposed to them.
3. Gowns should be worn when clothing may be soiled with body fluids, blood, secretions, or excretions.
4. Hands should be washed after removing gowns and gloves and before leaving the rooms of known or suspected AIDS patients. Hands should also be washed thoroughly and immediately if they become contaminated with blood.
5. Blood and other specimens should be labeled prominently with a special warning, such as "Blood Precautions" or "AIDS Precautions." If the outside of the specimen container is visibly contaminated with blood, it should be cleaned with a disinfectant (such as a 1:10 dilution of 5.25% sodium hypochlorite [household bleach] with water). All blood specimens should be placed in a second container, such as an impervious bag, for transport. The container or bag should be examined carefully for leaks or cracks.
6. Blood spills should be cleaned up promptly with a disinfectant solution, such as sodium hypochlorite (see above).
7. Articles soiled with blood should be placed in an impervious bag prominently labeled "AIDS Precautions" or "Blood Precautions" before being sent for reprocessing or disposal. Alternatively, such contaminated items may be placed in plastic bags of a particular color designated solely for disposal of infectious wastes by the hospital. Disposable items should be incinerated or disposed of in accord with the hospital's policies for disposal of infectious wastes. Reusable items should be reprocessed in accord with hospital policies for hepatitis B virus-contaminated items. Lensed instruments should be sterilized after use on AIDS patients.
8. Needles should not be bent after use, but should be promptly placed in a puncture-resistant container used solely for such disposal. Needles should not be reinserted into their original sheaths before being discarded into the container, since this is a common cause of needle injury.
9. Disposable syringes and needles are preferred. Only needle-locking syringes or one-piece needle-syringe units should be used to aspirate fluids from patients, so that collected fluid can be safely discharged through the needle, if desired. If reusable syringes are employed, they should be decontaminated before reprocessing.
10. A private room is indicated for patients who are too ill to use good hygiene, such as those with profuse diarrhea, fecal incontinence, or altered behavior secondary to central nervous system infections.

Precautions appropriate for particular infections that concurrently occur in AIDS patients should be added to the above, if needed.

B. The following precautions are advised for persons performing laboratory tests or studies on clinical specimens or other potentially infectious materials (such as inoculated tissue

cultures, embryonated eggs, animal tissues, etc.) from known or suspected AIDS cases:

1. Mechanical pipetting devices should be used for the manipulation of all liquids in the laboratory. Mouth pipetting should not be allowed.
2. Needles and syringes should be handled as stipulated in Section A (above).
3. Laboratory coats, gowns, or uniforms should be worn while working with potentially infectious materials and should be discarded appropriately before leaving the laboratory.
4. Gloves should be worn to avoid skin contact with blood, specimens containing blood, blood-soiled items, body fluids, excretions, and secretions, as well as surfaces, materials, and objects exposed to them.
5. All procedures and manipulations of potentially infectious material should be performed carefully to minimize the creation of droplets and aerosols.
6. Biological safety cabinets (Class I or II) and other primary containment devices (e.g., centrifuge safety cups) are advised whenever procedures are conducted that have a high potential for creating aerosols or infectious droplets. These include centrifuging, blending, sonicating, vigorous mixing, and harvesting infected tissues from animals or embryonated eggs. Fluorescent activated cell sorters generate droplets that could potentially result in infectious aerosols. Translucent plastic shielding between the droplet-collecting area and the equipment operator should be used to reduce the presently uncertain magnitude of this risk. Primary containment devices are also used in handling materials that might contain concentrated infectious agents or organisms in greater quantities than expected in clinical specimens.
7. Laboratory work surfaces should be decontaminated with a disinfectant, such as sodium hypochlorite solution (see A5 above), following any spill of potentially infectious material and at the completion of work activities.
8. All potentially contaminated materials used in laboratory tests should be decontaminated, preferably by autoclaving, before disposal or reprocessing.
9. All personnel should wash their hands following completion of laboratory activities, removal of protective clothing, and before leaving the laboratory.

C. The following additional precautions are advised for studies involving experimental animals inoculated with tissues or other potentially infectious materials from individuals with known or suspected AIDS.

1. Laboratory coats, gowns, or uniforms should be worn by personnel entering rooms housing inoculated animals. Certain nonhuman primates, such as chimpanzees, are prone to throw excreta and to spit at attendants; personnel attending inoculated animals should wear molded surgical masks and goggles or other equipment sufficient to prevent potentially infective droplets from reaching the mucosal surfaces of their mouths, nares, and eyes. In addition, when handled, other animals may disturb excreta in their bedding. Therefore, the above precautions should be taken when handling them.
2. Personnel should wear gloves for all activities involving direct contact with experimental animals and their bedding and cages. Such manipulations should be performed carefully to minimize the creation of aerosols and droplets.
3. Necropsy of experimental animals should be conducted by personnel wearing gowns and gloves. If procedures generating aerosols are performed, masks and goggles should be worn.
4. Extraordinary care must be taken to avoid accidental sticks or cuts with sharp instruments contaminated with body fluids or tissues of experimental animals inoculated with material from AIDS patients.
5. Animal cages should be decontaminated, preferably by autoclaving, before they are cleaned and washed.
6. Only needle-locking syringes or one-piece needle-syringe units should be used to inject potentially infectious fluids into experimental animals.

The above precautions are intended to apply to both clinical and research laboratories. Biological safety cabinets and other safety equipment may not be generally available in clinical laboratories. Assistance should be sought from a microbiology laboratory, as needed, to assure containment facilities are adequate to permit laboratory tests to be conducted safely.

Reported by Hospital Infections Program, Div of Viral Diseases, Div of Host Factors, Div of Hepatitis and Viral Enteritis, AIDS Activity, Center for Infectious Diseases, Office of Biosafety, CDC; Div of Safety, National Institutes of Health.

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Cryptosporidiosis: Assessment of Chemotherapy of Males with Acquired Immune Deficiency Syndrome (AIDS)

Since December 1979, 21 males with severe, protracted diarrhea caused by the parasite, *Cryptosporidium*, have been reported to CDC by physicians in Boston, Los Angeles, Newark, New York, Philadelphia, and San Fransisco. All 21 have acquired immune deficiency syndrome (AIDS); 20 are homosexual; and one is a heterosexual Haitian. Their ages range from 23 to 62 years with a mean of 35.7 years. Most had other opportunistic infections or Kaposi's sarcoma in addition to cryptosporidiosis. Eleven had *Pneumocystis carinii* pneumonia (PCP); nine had Candida esophagitis; two had a disseminated *Mycobacterium avium-intracellulare* infection; one had a disseminated cytomegalovirus infection; and two had Kaposi's sarcoma. T-lymphocyte helper-to-suppressor ratios were decreased (< 0.9) in all 18 patients on whom this test was performed. Fourteen patients have died.

The illness attributed to *Cryptosporidium* was characterized by chronic, profuse, watery diarrhea. The mean duration of diarrhea was 4 months, often continuing until the patient's death. Bowel movement frequency ranged from six to 25 per day. The estimated maximum volume of stool during illness ranged from 1 to 17 liters per day with a mean of 3.6 liters per day. Diagnosis of cryptosporidiosis was made by histologic examination of small bowel biopsies (13 patients) or large bowel biopsies (four patients), or by stool examination using a sucrose concentration technique (16 patients) (*1*). More than one type of diagnostic method was positive for several patients.

Table 1 shows the drugs given to the 21 patients while they had diarrhea attributed to *Cryptosporidium*. Only two patients (9.5%) have had sustained resolution of their diarrhea with negative follow-up stool examinations. The first was being treated with prednisone (60 mg daily) for chronic active hepatitis at the time his diarrhea began. When cryptosporidiosis was diagnosed, he was started on diloxanide furoate (500 mg three times daily for 10 days), and the prednisone was tapered over 2 weeks and then stopped. Two weeks later, his diarrhea was improving; in another 2 weeks, his diarrhea had completely resolved. He has had no diarrhea for 8 months. Follow-up stool examinations 2 weeks and 6 weeks after discontinuation of diloxanide furoate were negative for *Cryptosporidium*.

The second patient, who also had a clinical and parasitologic response, subsequently died of PCP. In early February 1982, 6 months before his death, he had onset of watery diarrhea, and a small bowel biopsy showed *Cryptosporidium*. Treatment with furazolidone (100 mg four times a day) was initiated on May 5, and within 6 days, the patient had gained 1.1 kilograms (2.4 pounds); parenteral nutrition was discontinued, although he continued to produce a liter of watery stool each day. Ten days after treatment was started, his stools became formed for the first time in 4 months, but *Cryptosporidium* oocysts were still present. Furazolidone was increased to 150 mg four times daily. Twenty days after therapy was started (10 days after the higher dose of furazolidone was begun), the patient had one bowel movement a day, but his stool was still positive for *Cryptosporidium* and remained positive despite continued use of furazolidone at 150 mg four times daily for a total of 2 months. At that time, two stool examinations failed to detect oocysts, and the furazolidone was stopped. One week later, the patient developed PCP; despite treatment with trimethoprim-sulfamethoxazole, he died 2 weeks later on July 22. An autopsy was not permitted.

After various treatment regimens, seven patients have had partial or transitory decreases in their diarrhea. Two received no anti-parasitic drugs. A third patient temporarily improved after treatment with furazolidone (100 mg orally four times a day for 7 days), although 2 weeks elapsed between the end of treatment with furazolidone and the onset of clinical improvement. The patient's diarrhea abated, but follow-up stool examinations remained positive for *Cryptosporidium*. Three months after furazolidone therapy, he again developed diarrhea, and his stools were positive for *Cryptosporidium*. Two patients had less diarrhea when given tetracycline. The first received tetracycline 500 mg orally four times a day for 4 months. His diarrhea decreased from 12 watery stools to three loose stools per day, but stool examination after 4 months of therapy still showed *Cryptosporidium*. The second patient, given the same treatment, also had a reduction in the number of stools. When the drug was discontinued, his diarrhea again increased.

Two patients' diarrhea stopped following treatment with opiates and metronidazole, given orally in one case and intravenously in the other. Neither patient had diarrhea after a few days of treatment, but both died within 1 week, and autopsies were not allowed. The first patient died from suspected peritonitis; the second died with disseminated Kaposi's sarcoma and pneumonia.

The remaining 12 patients have had continuous, severe diarrhea. In addition to the drugs listed in Table 1, bovine-transfer factor has been given to one patient and intravenous gamma globulin to two patients; neither was effective. At present, 14 (66.7%) of the 21 individuals have died, and six are alive with persistent diarrhea. In no instance was cryptosporidiosis thought to be the direct cause of death, but the associated severe malnutrition was often considered a contributing factor.

Shortly before cryptosporidiosis was recognized in AIDS patients, investigators at the U.S Department of Agriculture National Animal Disease Center (NADC) began testing drugs for efficacy against *Cryptosporidium* in animals; results of these initial studies were published in February, 1982 (*2*). More recently, five additional drugs have been evaluated at the NADC. Calves or pigs up to 14 days old without infection were given the drugs orally twice daily. One day after the drugs were started, each animal received a single oral inoculation of *Cryptosporidium*. The following drugs (with doses in mg/kg/day) were tested: amprolium (10.7), difluoromethylornithine (1250) plus bleomycin (6 IM), diloxanide furoate (125.0), dimetridazole (19.0), ipronidazole (23.8), lasalocid (0.7), metronidazole (23.8), monensin (4.8), oxytetracycline (50.0), pentamidine (10.0), quinacrine (11.9), salinomycin (6.0), sulfaquinoxaline (200.0), sulfadimidine (119.0), and trimethoprim (4.8) plus sulfadiazine (23.8). Although small numbers of animals were tested in each treatment group, no drugs prevented fecal shedding of oocysts or reduced the number of *Cryptosporidium* seen on intestinal biopsies.

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TABLE 1. Drugs used to treat males with cryptosporidiosis and AIDS

Drug*	Dose and route of administration†	Number of patients	Unchanged n	Unchanged (%)	Improved§ n	Improved§ (%)	Cured¶ n	Cured¶ (%)
No treatment	—	2	0	(0.0)	2	(100.0)	0	(0.0)
Trimethoprim/ sulfamethoxazole	25 mg/kg QID of sulfamethoxazole	7	7	(100.0)	0	(0.0)	0	(0.0)
Trimethoprim/ sulfamethoxazole	800 mg PO BID of sulfamethoxazole	4	4	(100.0)	0	(0.0)	0	(0.0)
Furazolidone	100 mg PO QID	6	4	(66.7)	1	(16.7)	1	(16.7)
Furazolidone	300 mg PO QID	1	1	(100.0)	0	(0.0)	0	(0.0)
Metronidazole	750 mg PO TID	5	4	(80.0)	1	(20.0)	0	(0.0)
Metronidazole	750 mg IV TID	1	0	(0.0)	1	(100.0)	0	(0.0)
Pyrimethamine/ sulfa	25 mg PO per day of pyrimethamine	4	4	(100.0)	0	(0.0)	0	(0.0)
Diloxanide furoate	500 mg PO TID	3	2	(66.7)	0	(0.0)	1**	(33.3)
Quinacrine	100 mg PO TID	3	3	(100.0)	0	(0.0)	0	(0.0)
Diiodohydroxyquin	650 mg PO TID	2	2	(100.0)	0	(0.0)	0	(0.0)
Tetracycline	500 mg PO QID	3	1	(33.3)	2	(66.6)	0	(0.0)
Doxycycline	100 mg PO per day	2	2	(100.0)	0	(0.0)	0	(0.0)
Pentamidine	4 mg/kg IM per day	2	2	(100.0)	0	(0.0)	0	(0.0)
Chloroquine/ primaquine	500 mg PO per day of chloroquine	1	1	(100.0)	0	(0.0)	0	(0.0)

*Some patients received more than one drug.

†BID = twice daily; TID = three times daily; QID = four times daily; PO = orally; IV = intravenously

§Decrease in number of stools by at least 50%.

¶Absence of diarrhea for more than 2 weeks and stool examination negative for *Cryptosporidium*.

**Improvement temporally related to stopping prednisone.

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Editorial Note: *Cryptosporidium* is a protozoan parasite; it is a well recognized cause of diarrhea in animals, especially calves, but has only rarely been associated with diarrhea in humans (*3*). Individuals with normal immune function who have developed cryptosporidiosis have self-limited diarrhea lasting 1-2 weeks, but immunosuppressed individuals have developed chronic diarrhea. An effective drug to treat cryptosporidiosis has not been identified, and the above reports are equally discouraging. Of seven patients who are still living, only one has no diarrhea at present. His recovery coincided with treatment with diloxanide furoate and discontinuation of prednisone. It seems unlikely that diloxanide furoate was responsible for his recovery, since three other patients who received the drug did not respond, and the drug was ineffective in experimentally infected pigs given nearly six times the recommended human dose. It is similarly difficult to be certain that improvement reported in other patients was due to the drugs they received because only a few patients receiving a drug responded, responses were brief, and the same or similar drugs were ineffective in preventing infection in experimental animals. The difficulty in interpreting isolated responses is underscored by the two patients who improved before any specific therapy began.

Since none of the drugs reported above appears clearly efficacious, additional tests of other anti-parasitic drugs in animals are needed. Until an effective drug for cryptosporidiosis is identified or the underlying immune deficiency in patients with AIDS becomes correctable, management of diarrhea due to cryptosporidiosis will continue to focus on supportive care.

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Update on Acquired Immune Deficiency Syndrome (AIDS) among Patients with Hemophilia A

In July 1982, three heterosexual hemophilia A patients, who had developed *Pneumocystis carinii* pneumonia and other opportunistic infections, were reported (*1*). Each had in vitro evidence of lymphopenia and two patients who were specifically tested had evidence of T-lymphocyte abnormalities. All three have since died. In the intervening 4 months, four additional heterosexual hemophilia A patients have developed one or more opportunistic infections accompanied by in-vitro evidence of cellular immune deficiency; these four AIDS cases and one highly suspect case are presented below. Data from inquiries about the patients' sexual activities, drug usage, travel, and residence provide no suggestion that disease could have been acquired through contact with each other, with homosexuals, with illicit drug abusers, or with Haitian immigrants—groups at increased risk for AIDS compared with the general U.S. population. All these patients have received Factor VIII concentrates, and all but one have also received other blood components.

Case 1: A 55-year-old severe hemophiliac from Alabama developed anorexia and progressive weight loss beginning in September 1981. He had developed adult-onset diabetes mellitus in 1973, which had required insulin therapy since 1978. He had had acute hepatitis (type unknown) in 1975. In March 1982, he was hospitalized for herpes zoster and a 17-kg weight loss. Hepatosplenomegaly was noted. The absolute lymphocyte count was 450/mm^3. Liver enzymes were elevated; antibodies to hepatitis B core and surface antigens were present. A liver biopsy showed changes consistent with persistent hepatitis. Evaluation for an occult malignancy was negative. The zoster resolved following 5 days of adenosine arabinoside therapy.

In early June, he was readmitted with fever and respiratory symptoms. Chest x-ray showed bibasilar infiltrates. No causative organism was identified, but clinical improvement occurred coincident with administration of broad spectrum antibiotics. Laboratory studies as an outpatient documented transient thrombocytopenia (63,000/mm^3) and persistent inver-

sion of his T-helper/T-suppressor ratio (T_H/T_S =0.2). He was readmitted for the third time in early September with fever, chills and nonproductive cough. His cumulative weight loss was now 47 kg. Chest x-ray demonstrated bilateral pneumonia, and open lung biopsy showed infection with *P. carinii*. He responded to sulfamethoxazole/trimethoprim (SMZ/TMP). His T-cell defects persist.

Case 2: A 10-year-old severe hemophiliac from Pennsylvania had been treated with Factor VIII concentrate on a home care program. He had never required blood transfusion. He had been remarkably healthy until September 1982 when he experienced intermittent episodes of fever and vomiting. Approximately 2 weeks later, he also developed persistent anorexia, fatigue, sore throat, and nonproductive cough. On October 20, he was admitted to a hospital with a temperature of 38.4 C (101.2 F) and a respiratory rate of 60/min. Physical examination revealed cervical adenopathy but no splenomegaly. The absolute number of circulating lymphocytes was low (580/mm^3) and the T-helper/T-suppressor ratio was markedly reduced (T_H/T_S = 0.1). His platelet count was 171,000/mm^3. Serum levels of IgG, IgA, and IgM were markedly elevated. Chest x-rays showed bilateral pnuemonia and an open lung biopsy revealed massive infiltration with *P. carinii* and *Cryptococcus neoformans*. Intravenous SMZ/TMP and amphotericin B have led to marked clinical improvement, but the T-cell abnormalities persist.

Case 3: A 49-year-old patient from Ohio with mild hemophilia had been treated relatively infrequently with Factor VIII concentrate. During the summer of 1982, he noted dysphagia and a weight loss of approximately 7 kg. In October, he was treated for cellulitis of the right hand. Two weeks later, he was observed by a close relative to be dyspneic. He was admitted in November with progressive dyspnea and diaphoresis. Chest x-rays suggested diffuse pneumonitis. His WBC count was 11,000/mm^3 with 9% lymphocytes (absolute lymphocyte number 990/mm^3). The T_H/T_S ratio was 0.25. Open lung biopsy revealed *P. carinii*. The patient was treated with SMZ/TMP for 6 days with no improvement, and pentamidine isethionate was added. Virus cultures of sputum and chest tube drainage revealed herpes simplex virus. He died on November 22.

Case 4: A 52-year-old severe hemophiliac from Missouri was admitted to a hospital in April 1982 with fever, lymphadenopathy, and abdominal pain. Persistently low numbers of circulating lymphocytes were noted (480/mm^3). Granulomata were seen on histopathologic examination of a bone marrow aspirate. Cultures were positive for *Histoplasma capsulatum*. The patient improved after therapy with amphotericin B. During the following summer and early fall, he developed fever, increased weight loss, and difficulty thinking. On readmission in early November, he had esophageal candidiasis. Laboratory tests showed profound leukopenia and lymphopenia. A brain scan showed a left frontal mass, which was found to be an organizing hematoma at the time of craniotomy. A chest x-ray showed "fluffy" pulmonary infiltrates. Therapy with SMZ/TMP was begun. Exploratory laparotomy revealed no malignancy. A splenectomy was performed. Biopsies of liver, spleen, and lymph node tissues were negative for *H capsulatum* granulomata. The lymphoid tissue including the spleen showed an absence of lymphocytes. His total WBC declined to 400/mm^3 and the T_H/T_S cell ratio was 0.1. He died shortly thereafter.

Suspect Case: Described below is an additional highly suspect case that does not meet the strict criteria defining AIDS. A 7-year-old severe hemophiliac from Los Angeles had mild mediastinal adenopathy on chest x-ray in September 1981. In March 1982, he developed a spontaneous subdural hematoma requiring surgical evacuation. In July, he developed parotitis. In August, he developed pharyngitis and an associated anterior and posterior cervical adenopathy, which has not resolved. In late September, he developed herpes zoster over the right thigh and buttock, and oral candidiasis . Chest x-rays revealed an increase of the mediastinal adenopathy and the appearance of new perihilar infiltrates. In late October, enlargement of the cervical nodes led to a lymph node biopsy. Architectural features of the nods were grossly altered, with depletion of lymphocytes. Heterophile tests were negative. IgG, IgA, and IgM levels were all elevated. He has a marked reduction in T-helper cells and a T_H/T_S ratio equal to 0.4. Recent progressive adenoid enlargement has caused significant upper airway obstruction and resultant sleep apnea.

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Editorial Note: These additional cases of AIDS among hemophilia A patients share several features with the three previously reported cases. All but one are severe hemophiliacs, requiring large amounts of Factor VIII concentrate. None had experienced prior opportunistic infections. All have been profoundly lymphopenic (< 1000 lymphocytes/mm^3) and have had irreversible deficiencies in T-lymphocytes. Clinical improvement of opportunistic infections with medical therapy has been short lived. Two of the five have died.

In most instances, these patients have been the first AIDS cases in their cities, states, or regions. They have had no known common medications, occupations, habits, types of pets, or any uniform antecedent history of personal or family illnesses with immunological relevance.

Although complete information is not available on brands and lot numbers for the Factor VIII concentrate used by these additional five patients during the past few years, efforts to collect and compare these data with information obtained from the earlier three cases are under way. No common lot number has been found among the lots of Factor VIII given to the five patients from whom such information is currently available.

These additional cases provide important perspectives on AIDS in U.S. hemophiliacs. Two of the patients described here are 10 years of age or less, and children with hemophilia must now be considered at risk for the disease. In addition, the number of cases continues to increase, and the illness may pose a significant risk for patients with hemophilia.

The National Hemophilia Foundation and CDC are now conducting a national survey of hemophilia treatment centers to estimate the prevalence of AIDS-associated diseases during the past 5 years and to provide active surveillance of AIDS among patients with hemophilia.

Physicians are encouraged to continue to report AIDS-suspect diseases among hemophilia patients to the CDC through local and state health departments.

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Possible Transfusion-Associated Acquired Immune Deficiency Syndrome (AIDS) — California

CDC has received a report of a 20-month old infant from the San Francisco area who developed unexplained cellular immunodeficiency and opportunistic infection. This occurred after multiple transfusions, including a transfusion of platelets derived from the blood of a male subsequently found to have the acquired immune deficiency syndrome (AIDS).

The infant, a white male, was delivered by caesarian section on March 3, 1981. The estimated duration of pregnancy was 33 weeks; and the infant weighed 2850 g. The mother was known to have developed Rh sensitization during her first pregnancy, and amniocentesis done during this, her second, pregnancy showed the fetus had erythroblastosis fetalis. The infant had asphyxia at birth and required endotracheal intubation. Because of hyperbilirubinemia, six double-volume exchange transfusions were given over a 4-day period. During the 1-month hospitalization following birth, the infant received blood products, including whole blood, packed red blood cells, and platelets from 19 donors. All blood products were irradiated.

After discharge in April 1981, the infant appeared well, although hepatosplenomegaly was noted at age 4 months. At 7 months, he was hospitalized for treatment of severe otitis media. Oral candidiasis developed following antibiotic therapy and persisted. At 9 months of age, he developed anorexia, vomiting, and then jaundice. Transaminase levels were elevated, and serologic tests for hepatitis A and B viruses and cytomegalovirus were negative; non-A non-B hepatitis was diagnosed.

At 14 months of age, the infant developed neutropenia and an autoimmune hemolytic anemia and thrombocytopenia. Immunologic studies showed elevated serum concentrations of IgG, IgA, and IgM, decreased numbers of T-lymphocytes, and impaired T-cell function in vitro. Following these studies, he was begun on systemic corticosteroid therapy for his hematologic disease. Three months later, a bone marrow sample, taken before steroid therapy began, was positive for *Mycobacterium avium-intracellulare*. Cultures of urine and gastric aspirate, taken while the infant received steroids, also grew *M. avium-intracellulare*. The infant is now receiving chemotherapy for his mycobacterial infection. He continues to have thrombocytopenia.

The parents and brother of the infant are in good health. The parents are heterosexual non-Haitians and do not have a history of intravenous drug abuse. The infant had no known personal contact with an AIDS patient.

Investigation of the blood products received by the infant during his first month of life has revealed that one of the 19 donors was subsequently reported to have AIDS. The donor, a 48-year-old white male resident of San Francisco, was in apparently good health when he donated blood on March 10, 1981. Platelets derived from this blood were given to the infant on March 11. Eight months later, the donor complained of fatigue and decreased appetite. On examination, he had right axillary lymphadenopathy, and cotton-wool spots were seen in the retina of the left eye. During the next month, December 1981, he developed fever and severe tachypnea and was hospitalized with biopsy-proven *Pneumocystis carinii* pneumonia.

Although he improved on antimicrobial therapy and was discharged after a 1-month hospitalization, immunologic studies done in March 1982 showed severe cellular immune dysfunction typical of AIDS. In April 1982, he developed fever and oral candidiasis, and began to lose weight. A second hospitalization, beginning in June 1982, was complicated by *Salmonella* sepsis, perianal herpes simplex virus infection, encephalitis of unknown etiology, and disseminated cytomegalovirus infection. He died in August 1982.

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Editorial Note: The etiology of AIDS remains unknown, but its reported occurrence among homosexual men, intravenous drug abusers, and persons with hemophilia A (*1*) suggests it may be caused by an infectious agent transmitted sexually or through exposure to blood or blood products. If the infant's illness described in this report is AIDS, its occurrence following receipt of blood products from a known AIDS case adds support to the infectious-agent hypothesis.

Several features of the infant's illness resemble those seen among adults with AIDS. Hypergammaglobulinemia with T-cell depletion and dysfunction are not typical of any of the well-characterized congenital immunodeficiency syndromes (*2*), but are similar to abnormalities described in AIDS (*3*). Disseminated *M. avium-intracellulare* infection, seen in this infant, is a reported manifestation of AIDS (*4*). Autoimmune thrombocytopenia, also seen in this infant, has been described among several homosexual men with immune dysfunction typical of AIDS (*5*). Nonetheless, since there is no definitive laboratory test for AIDS, any interpretation of this infant's illness must be made with caution.

If the platelet transfusion contained an etiologic agent for AIDS, one must assume that the agent can be present in the blood of a donor before onset of symptomatic illness and that the incubation period for such illness can be relatively long. This model for AIDS transmission is consistent with findings described in an investigation of a cluster of sexually related AIDS cases among homosexual men in southern California (*6*).

Of the 788 definite AIDS cases among adults reported thus far to CDC, 42 (5.3%) belong to no known risk group (i.e., they are not known to be homosexually active men, intravenous drug abusers, Haitians, or hemophiliacs). Two cases received blood products within 2 years of the onset of their illnesses and are currently under investigation.

This report and continuing reports of AIDS among persons with hemophilia A (*7*) raise serious questions about the possible transmission of AIDS through blood and blood products. The Assistant Secretary for Health is convening an advisory committee to address these questions.

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Unexplained Immunodeficiency and Opportunistic Infections in Infants — New York, New Jersey, California

CDC has received reports of four infants (under 2 years of age) with unexplained cellular immunodeficiency and opportunistic infections.

Case 1: The infant, a black/hispanic male weighing 5 lb 14 oz, was born in December 1980 following a 36-38-week pregnancy. Pregnancy had been complicated by bleeding in the fourth month and by preeclampsia in the ninth month. The infant was well until 3 months of age, when oral candidiasis was noted. At 4 months, hepatosplenomegaly was observed, and at 7 months, he had staphylococcal impetigo. Growth, which had been slow, stopped at 9 months. Head circumference, which had been below the third percentile, also stopped increasing. At 9 months, serum levels of IgG and IgA were normal; IgM was high-normal. T-cell studies were normal, except for impaired in-vitro responses to *Candida* antigen and alloantigen.

At 17 months of age, the infant had progressive pulmonary infiltrates, as well as continuing oral candidiasis, and was hospitalized. *Mycobacterium avium-intracellulare* was cultured from sputum and bone marrow samples. A CAT scan of the head revealed bilateral calcifications of the basal ganglia and subcortical regions of the frontal lobes. Repeat immunologic studies done at age 20 months showed lymphopenia, decreased numbers of T-lymphocytes, and severely impaired T-cell function in vitro; immunoglobulin determinations are pending. The infant remains alive and is receiving therapy for his mycobacterial infection.

The infant's mother, a 29-year-old resident of New York City, gave a history of intravenous drug abuse. Although she was in apparently good health at the time of the infant's birth, she developed fever, dyspnea, and oral candidiasis in October 1981. One month later, she was hospitalized and died of biopsy-proven *Pneumocystis carinii* pneumonia (PCP). She had been lymphopenic during the hospitalization; further immunologic studies were not done. At autopsy, no underlying cause for immune deficiency was found.

Case 2: The infant, a Haitian male weighing 6 lb 11 oz, was born in January 1981 following full-term pregnancy. The immediate postpartum period was complicated by respiratory distress. Diarrhea developed at 2 weeks of age and persisted. His physical development was retarded. At 5 months, he was hospitalized because of fever and diarrhea. On examination, he had hepatosplenomegaly, lymphadenopathy, and otitis media. While on antibiotics, he developed pulmonary infiltrates. An open lung biopsy revealed *Pneumocystis carinii, Cryptococcus neoformans,* and cytomegalovirus. Serum IgG, IgA, and IgM concentrations were elevated. The percentage of T-lymphocytes was decreased, but T-cell response to mitogens was normal. The infant died of respiratory insufficiency at 7½ months of age. At autopsy, the thymus, spleen, and lymph nodes showed lymphocyte depletion. His parents were residents of Brooklyn, New York; their health status is unknown.

Case 3: The infant, a Haitian male weighing 8 lb, was born in November 1981 following a normal, full-term pregnancy. He was apparently healthy until 5 months of age, when he was hospitalized with fever and respiratory distress. On examination, he had hepatosplenomegaly. A chest x-ray showed bilateral pulmonary infiltrates. Despite antibiotic therapy, the infant's condition deteriorated, and an open lung biopsy revealed PCP. Immunologic studies showed elevated serum concentrations of IgG, IgA and IgM, decreased percentage of T-lymphocytes, and impaired T-cell function in vitro. The infant died in May 1982. At autopsy, no cardiovascular anomalies were seen; the thymus was hypoplastic, but all lobes were present. His parents were residents of Newark, New Jersey; their health status is unknown.

Case 4: The infant, a white female weighing 5 lb, was born in April 1982 following a normal 35-week pregnancy. She was well until 2 months of age, when oral and vaginal *Candida* infections were noted. She responded to antifungal therapy, but at 5 months, candidiasis recurred, and she had hepatosplenomegaly. Immunologic evaluation showed that serum IgG, IgA, and IgM levels, normal at 2 months, were now elevated. The percentage of T-lymphocytes was decreased, and lymphocyte response to alloantigen was impaired. At 6 months of age, the infant was hospitalized because of fever and cough. Open lung biopsy revealed PCP. Despite appropriate antibiotic therapy, she died in November 1982.

The infant's mother, a 29-year-old resident of San Francisco, is a prostitute and intravenous drug abuser with a history of oral candidiasis and mild lymphopenia. She has had two other female children by different fathers. These half-sisters also have unexplained cellular immunodeficiency; one died of PCP. The children had not lived together.

None of the four infants described in the case reports was known to have received blood or blood products before onset of illness.

Other cases with opportunistic infections: Six additional young children with opportunistic infections (five with PCP, one with *M. avium-intracellulare*) and unusual cellular immunodeficiencies are under investigation. Three are male. All six children have died. One was a half-sister of the infant in Case 4.

Other cases without opportunistic infections: Physicians from New York City, New Jersey, and California have reported another 12 young children with immunodeficiencies similar to those seen in cases 1-4 but without life-threatening opportunistic infections. One is the other half-sister of the infant in Case 4. All the children are living; their ages range from 1 to 4 years. Eight are male. Clinical features seen in these 12 infants include: failure to thrive (83%), oral candidiasis (50%), hepatosplenomegaly (92%), generalized lymphadenopathy (92%), and chronic pneumonitis without a demonstrable infection (83%). Of the nine mothers for whom information is available, seven are reported to be intravenous drug abusers. None is Haitian.

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Editorial Note: The nature of the immune dysfunction described in the four case reports is unclear. The infants lacked the congenital anomalies associated with Di George's syndrome. The immunologic features of high-normal or elevated immunoglobulin levels and T-lymphocyte depletion are not typical of any of the well-defined congenital immunodeficiency syndromes. They have, however, been described in a few children with variants of Nezelof's syndrome, a rare, poorly characterized illness of unknown etiology (*1,2*). The occurrence of immune deficiency in the infant in case 4 and in her half-sisters raises the possibility of an inherited disorder. However, inheritance would have to have occurred in a dominant manner, an inheritance pattern not previously described for immunodeficiency resembling that seen in these half-sisters.

It is possible that these infants had the acquired immune deficiency syndrome (AIDS). Although the mother of the infant in case 1 was not studied immunologically, her death from PCP was probably secondary to AIDS. The mothers of the other three infants were Haitian or intravenous drug abusers, groups at increased risk for AIDS (*3*). The immunologic features described in the case reports resemble those seen both in adults with AIDS (*4*) and in a child reported to have developed immunodeficiency following receipt of blood products from a patient with AIDS (*5*). Case 2 had essentially normal T-cell responses to mitogens in vitro. This finding is atypical for AIDS, but it has been seen in a few adult AIDS cases (*6*).

Although the etiology of AIDS remains unknown, a series of epidemiologic observations suggests it is caused by an infectious agent (*3,5,7-9*). If the infants described in the four case reports had AIDS, exposure to the putative "AIDS agent" must have occurred very early. Cases 2-4 were less than 6 months old when they had serious opportunistic infections. Case 1 had oral candidiasis beginning at 3 months of age, although *M. avium-intracellulare* infection was not documented until 17 months. Transmission of an "AIDS agent" from mother to child, either in utero or shortly after birth, could account for the early onset of immunodeficiency in these infants.

The relationship between the illnesses seen in the reported cases with severe opportunistic infection and the 12 infants without such infections is unclear at present. The immune dysfuction seen in the children and the sociodemographic profiles of the mothers appear similar in both groups. Prospective study of the 12 children is necessary to define the natural history of their illnesses and the possible relationship of their illnesses to AIDS.

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1983 Jan 7;31:697—8

Immunodeficiency among Female Sexual Partners of Males with Acquired Immune Deficiency Syndrome (AIDS) — New York

CDC has received reports of two females with cellular immunodeficiency who have been steady sexual partners of males with the acquired immune deficiency syndrome (AIDS).

Case 1: A 37-year-old black female began losing weight and developed malaise in June 1982. In July, she had oral candidiasis and generalized lymphadenopathy and then developed fever, non-productive cough, and diffuse intestitial pulmonary infiltrates. A transbronchial biopsy revealed *Pneumocystis carinii* pneumonia (PCP). Immunologic studies showed elevated immunoglobulin levels, lymphopenia, and an undetectable number of T-helper cells. She responded to antimicrobial therapy, but 3 months after hospital discharge had lymphadenopathy, oral candidiasis, and persistent depletion of T-helper cells.

The patient had no previous illnesses or therapy associated with immunosuppression. She admitted to moderate alcohol consumption, but denied intravenous (IV) drug abuse. Since 1976, she had lived with and had been the steady sexual partner of a male with a history of IV drug abuse. He developed oral candidiasis in March 1982 and in June had PCP. He had laboratory evidence of immune dysfunction typical of AIDS and died in November 1982.

Case 2: A 23-year-old Hispanic female was well until February 1982 when she developed generalized lymphadenopathy. Immunologic studies showed elevated immunoglobulin levels, lymphopenia, decreased T-helper cell numbers, and a depressed T-helper/T-suppressor cell ratio (0.82). Common infectious causes of lymphadenopathy were excluded by serologic testing. A lymph node biopsy showed lymphoid hyperplasia. The lymphadenopathy has persisted for almost a year; no etiology for it has been found.

The patient had no previous illnesses or therapy associated with immunosuppression and denied IV drug abuse. Since the summer of 1981, her only sexual partner has been a bisexual male who denied IV drug abuse. He developed malaise, weight loss and lymphadenopathy in June 1981 and oral candidiasis and PCP in June 1982. Skin lesions, present for 6 months, were biopsied in June 1982 and diagnosed as Kaposi's sarcoma. He has laboratory evidence of immune dysfunction typical of AIDS and remains alive.

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Editorial Note: Each reported female patient developed immunodeficiency during a close relationship, including repeated sexual contact, with a male who had AIDS. Patient 1 fits the CDC case definition of AIDS used for epidemiologic surveillance (*1*). Patient 2 does not meet this definition, but her persistent, generalized lymphadenopathy and cellular immunodeficiency suggest a syndrome described among homosexual men (*2*). The epidemiologic and immunologic features of this "lymphadenopathy syndrome" and the progression of some patients with this syndrome to Kaposi's sarcoma and opportunistic infections suggest it is part of the AIDS spectrum (*3,4*). Other than their relationships with their male sexual partners, neither patient had any apparent risk factor for AIDS. Both females specifically denied IV drug abuse.

Epidemiologic observations increasingly suggest that AIDS is caused by an infectious agent. The description of a cluster of sexually related AIDS patients among homosexual males in southern California suggested that such an agent could be transmitted sexually or through other intimate contact (*5*). AIDS has also been reported in both members of a male homosexual couple in Denmark (*6*). The present report supports the infectious-agent hypothesis and the possibility that transmission of the putative "AIDS agent" may occur among both heterosexual and male homosexual couples.

Since June 1981, CDC has received reports of 43 previously healthy females who have developed PCP or other opportunistic infections typical of AIDS. Of these 43 patients, 13 were reported as neither Haitians nor IV drug abusers. One of these 13 females is described in case 1; another four, including two wives, are reported to be steady sexual partners of male IV drug abusers. Although none of the four male partners has had an overt illness suggesting AIDS, immunologic studies of blood specimens from one of these males have shown abnormalities of lymphoproliferative response (7). Conceivably, these male drug abusers are carriers of an infectious agent that has not made them ill but caused AIDS in their infected female sexual partners.

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Acquired Immune Deficiency Syndrome (AIDS) in Prison Inmates — New York, New Jersey

CDC has received reports from New York and New Jersey of 16 prison inmates with the acquired immune deficiency syndrome (AIDS).

New York: Between November 1981 and October 1982, ten AIDS cases (nine with *Pneumocystis carinii* pneumonia [PCP] and one with Kaposi's sarcoma [KS]) were reported among inmates of New York State correctional facilities. The patients had been imprisoned from 3 to 36 months (mean 18.5 months) before developing symptoms of these two diseases.

All ten patients were males ranging in age from 23 to 38 years (mean 29.7 years). Four were black, and of the six who were white, two were Hispanic. Four of the nine patients with PCP died; the patient with KS is alive. All nine patients with PCP also developed oral candidiasis. None of the patients was known to have an underlying illness associated with immunosuppression, and no such illness was found at postmortem examination of the four patients who died. PCP was diagnosed in all nine cases by means of transbronchial or open-lung biopsy, while KS was diagnosed by biopsy of a lesion on the leg.

Evidence of cellular immune dysfunction was present in the nine patients with PCP: eight were lymphopenic, and all nine were anergic to multiple cutaneous recall antigens. An abnormally low ratio of T-helper to T-suppressor cells was present in six of seven patients tested, and in vitro lymphocyte proliferative responses to a variety of mitogens and antigens were significantly depressed or negative in the six patients tested. The one patient with KS had cutaneous anergy and a decreased proportion of T-cells in his peripheral blood. The ratio of T-helper to T-suppressor cells was normal; studies of lymphoproliferative response were not done.

All ten patients reported that they were heterosexual before imprisonment; one is known to have had homosexual contacts since confinement. However, the nine patients with PCP were regular users of intravenous (IV) drugs (principally heroin and cocaine) in New York City before imprisonment. The seven patients who were extensively interviewed denied regular IV drug use since confinement, although two reported occasional use of IV drugs while in prison. The ten patients were housed in seven different prisons when they first developed PCP or KS. Three patients who developed symptoms of PCP within 1 month of each other were confined in the same facility. However, they were housed in separate buildings, and each denied any social interaction (including homosexual contact and drug use) with the other patients.

All inmates of the New York State correctional system receive a medical evaluation when transferred from local or county jails; this usually includes a leukocyte count. Of the nine AIDS patients who initially had leukocyte counts, seven did not then have symptoms of AIDS. Four of these seven asymptomatic males had leukocyte counts below 4000/mm^3. For these four,

the time between leukocyte counts and development of clinical PCP symptoms ranged from 4 to 19 months (mean 11.5 months).

New Jersey: Of the 48 AIDS cases reported from New Jersey since June 1981, six have involved inmates of New Jersey State correctional facilities. All six had PCP. They were imprisoned from 1 to 36 months (mean 17.5 months) before onset of symptoms.

All six patients were males ranging in age from 26 to 41 years (mean 32 years). Three were black; three, white. Four of the six died within 1-8 months of onset of their illnesses. None of the six was known to have underlying illness associated with immune deficiency. Immunologic studies of the two survivors have shown cutaneous anergy, leukopenia, lymphopenia, and increased circulating immune complexes. T-cell studies were not done.

All six patients have histories of chronic IV drug abuse. Of the five for whom sexual orientation was reported, four were heterosexual, and one was homosexual. The two living patients have denied both IV drug use and homosexual activity since imprisonment. No two of the six patients had been confined in the same facility at the same time.

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Editorial Note: Since male homosexuals and IV drug abusers are known to be at increased risk for AIDS (*1*), the occurrence of AIDS among imprisoned members of these groups might have been anticipated. Increasingly, epidemiologic observations suggest that AIDS is caused by an infectious agent transmitted sexually or through exposure to blood or blood products. Because of the difficulties inherent in interviewing prisoners, data elicited in such interviews must be viewed cautiously. Given this caution, the histories obtained from the inmates indicate that all or most of their drug use, and, by inference, their exposure to a blood-borne agent, occurred before confinement.

The presence of leukopenia in some of the prisoners tested on admission to the prison system may imply that laboratory evidence of immune dysfunction may precede clinical illness by months.

Health care personnel for correctional facilities should be aware of the occurrence of AIDS in prisoners, particularly prisoners with histories of IV drug abuse. AIDS cases identified in prisoners should be reported to local and state correctional and health departments and to CDC.

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Prevention of Acquired Immune Deficiency Syndrome (AIDS): Report of Inter-Agency Recommendations

Since June 1981, over 1,200 cases of acquired immune deficiency syndrome (AIDS) have been reported to CDC from 34 states, the District of Columbia, and 15 countries. Reported cases of AIDS include persons with Kaposi's sarcoma who are under age 60 years and/or persons with life-threatening opportunistic infections with no known underlying cause for immune deficiency. Over 450 persons have died from AIDS, and the case-fatality rate exceeds 60% for cases first diagnosed over 1 year previously (*1,2*). Reports have gradually increased in number. An average of one case per day was reported during 1981, compared with three to four daily in late 1982 and early 1983. Current epidemiologic evidence identifies several groups in the United States at increased risk for developing AIDS (*3-7*). Most cases have been reported among homosexual men with multiple sexual partners, abusers of intravenous (IV) drugs, and Haitians, especially those who have entered the country within the past few years. However, each group contains many persons who probably have little risk of acquiring AIDS. Recently, 11 cases of unexplained, life-threatening opportunistic infections and cellular immune deficiency have been diagnosed in patients with hemophilia. Available data suggest that the severe disorder of immune regulation underlying AIDS is caused by a transmissible agent.

A national case-control study and an investigation of a cluster of cases among homosexual men in California indicate that AIDS may be sexually transmitted among homosexual or bisexual men (*8,9*). AIDS cases were recently reported among women who were steady sexual partners of men with AIDS or of men in high-risk groups, suggesting the possibility of heterosexual transmission (*10*). Recent reports of unexplained cellular immunodeficiencies and opportunistic infections in infants born to mothers from groups at high risk for AIDS have raised concerns about in utero or perinatal transmission of AIDS (*11*). Very little is known about risk factors for Haitians with AIDS.

The distribution of AIDS cases parallels that of hepatitis B virus infection, which is transmitted sexually and parenterally. Blood products or blood appear responsible for AIDS among hemophilia patients who require clotting factor replacement. The likelihood of blood transmission is supported by the occurrence of AIDS among IV drug abusers. Many drug abusers share contaminated needles, exposing themselves to blood-borne agents, such as hepatitis B virus. Recently, an infant developed severe immune deficiency and an opportunistic infection several months after receiving a transfusion of platelets derived from the blood of a man subsequently found to have AIDS (*12*). The possibility of acquiring AIDS through blood components or blood is further suggested by several cases in persons with no known risk factors who have received blood products or blood within 3 years of AIDS diagnosis (*2*). These cases are currently under investigation.

No AIDS cases have been documented among health care or laboratory personnel caring for AIDS patients or processing laboratory specimens. To date, no person-to-person transmission has been identified other than through intimate contact or blood transfusion.

Several factors indicate that individuals at risk for transmitting AIDS may be difficult to identify. A New York City study showed that a significant proportion of homosexual men who were asymptomatic or who had nonspecific symptoms or signs (such as generalized lymphadenopathy) had altered immune functions demonstrated by in vitro tests (*2,13,14*). Similar findings have been reported among patients with hemophilia (*2,15,16*). Although the significance of these immunologic alterations is not yet clear, their occurrence in at least two groups at high risk for AIDS suggests that the pool of persons potentially capable of transmitting an AIDS agent may be considerably larger than the presently known number of AIDS cases. Furthermore, the California cluster investigation and other epidemiologic findings suggest a "latent period" of several months to 2 years between exposure and recognizable clinical illness and imply that transmissibility may precede recognizable illness. Thus, careful histories and physical examinations alone will not identify all persons capable of transmitting AIDS but should be useful in identifying persons with definite AIDS diagnoses or related symptoms, such as generalized lymphadenopathy, unexplained weight loss, and thrush. Since only a small percentage of members of high-risk groups actually has AIDS, a laboratory test is clearly needed to identify those with AIDS or those at highest risk of acquiring AIDS. For the above reasons, persons who may be considered at increased risk of AIDS include those with symptoms and signs suggestive of AIDS; sexual partners of AIDS patients; sexually active homosexual or bisexual men with multiple partners; Haitian entrants to the United States; present or past abusers of IV drugs; patients with hemophilia; and sexual partners of individuals at increased risk for AIDS.

Statements on prevention and control of AIDS have been issued by the National Gay Task Force, the National Hemophilia Foundation, the American Red Cross, the American Association of Blood Banks, the Council of Community Blood Centers, the American Association of Physicians for Human Rights, and others. These groups agree that steps should be implemented to reduce the potential risk of transmitting AIDS through blood products, but differ in the methods proposed to accomplish this goal. Public health agencies, community organizations, and medical organizations and groups share the responsibility to rapidly disseminate information on AIDS and recommended precautions.

Although the cause of AIDS remains unknown, the Public Health Service recommends the following actions:

1. Sexual contact should be avoided with persons known or suspected to have AIDS. Members of high risk groups should be aware that multiple sexual partners increase the probability of developing AIDS.
2. As a temporary measure, members of groups at increased risk for AIDS should refrain from donating plasma and/or blood. This recommendation includes all individuals belonging to such groups, even though many individuals are at little risk of AIDS. Centers collecting plasma and/or blood should inform potential donors of this recommendation. The Food and Drug Administration (FDA) is preparing new recommendations for manu-

facturers of plasma derivatives and for establishments collecting plasma or blood. This is an interim measure to protect recipients of blood products and blood until specific laboratory tests are available.

3. Studies should be conducted to evaluate screening procedures for their effectiveness in identifying and excluding plasma and blood with a high probability of transmitting AIDS. These procedures should include specific laboratory tests as well as careful histories and physical examinations.
4. Physicians should adhere strictly to medical indications for transfusions, and autologous blood transfusions are encouraged.
5. Work should continue toward development of safer blood products for use by hemophilia patients.

The National Hemophilia Foundation has made specific recommendations for management of patients with hemophilia (*17*).

The interim recommendation requesting that high-risk persons refrain from donating plasma and/or blood is especially important for donors whose plasma is recovered from plasmapheresis centers or other sources and pooled to make products that are not inactivated and may transmit infections, such as hepatitis B. The clear intent of this recommendation is to eliminate plasma and blood potentially containing the putative AIDS agent from the supply. Since no specific test is known to detect AIDS at an early stage in a potential donor, the recommendation to discourage donation must encompass all members of groups at increased risk for AIDS, even though it includes many individuals who may be at little risk of transmitting AIDS.

As long as the cause remains unknown, the ability to understand the natural history of AIDS and to undertake preventive measures is somewhat compromised. However, the above recommendations are prudent measures that should reduce the risk of acquiring and transmitting AIDS.

Reported by the Centers for Disease Control, the Food and Drug Administration, and the National Institutes of Health.

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The Safety of Hepatitis B Virus Vaccine

Since its licensure in 1981 and its general availability in July 1982, hepatitis B virus (HBV) vaccine has been administered to over 200,000 individuals, mostly health care workers. In a collaborative effort, the Centers for Disease Control, the Food and Drug Administration, and Merck, Sharp, and Dohme have collected information on illnesses that developed after receipt of HBV vaccine. All illnesses reported to any of these three groups have been recorded. Serious illnesses have been followed up by telephone or personal interviews. Some illnesses, especially minor ones, probably have not been reported, and many reported illnesses have not been causally related to the vaccine.

As of March 1, 1983, illness had been reported in 118 vaccinees (most illnesses began within 4 weeks of the first vaccine dose). Of the 118 cases, 56 (47.5%) were considered not likely to be attributable to vaccine use because: 1) another specific cause was identified, 2) onset of illness occurred before receipt of vaccine, or 3) the reported event was unrelated to the vaccine (e.g., deltoid pain after gluteal injection). Many of the remaining 62 illnesses may represent "background" disease rather than adverse reactions to the vaccine. Of these 62 persons, 57 (91.9%) had mild or moderate illness that included: six neurologic conditions (five persons with tremors and one with recurrent Bell's palsy); 11 skin or mucous membrane lesions (hives, herpes zoster, psoriasis, and nonspecific lesions); 10 musculo-skeletal ailments (including generalized aches, joint pain, and joint inflammation); five hepatitis-like illnesses (with increased liver enzyme levels and no other identified cause); and 25 miscellaneous complaints (14 persons with a flu-like syndrome, four with injection-site reactions, four with diarrhea, one with headache, one with vomiting, and one with self-limited chest pain with a normal cardiac evaluation).

Six persons had serious illness; illness was defined as serious when it caused hospitalization or other intensive medical care, lasted 14 days or more, caused permanent disability, or was life-threatening. Five of these serious illnesses included one case each of erythema multiforme, aseptic meningitis, grand mal seizure, possible transverse myelitis, and Guillain-Barré syndrome (GBS). A second case of GBS was also reported in a person with antecedent febrile illness, presumptively caused by cytomegalovirus; febrile illness began 11 days after receipt of HBV vaccine, and GBS began 10 days after onset of febrile illness. This case was thus counted among the 56 illnesses not likely to be attributable to the vaccine. Although the numbers of vaccinees and GBS cases are too few on which to base firm conclusions, two cases of GBS do not exceed the number expected by chance alone within 6 weeks of vaccinating 200,000 people (23 GBS cases per million adults per year).

Whether acquired immune deficiency syndrome (AIDS) could be associated with HBV vaccine has been questioned, since the vaccine is made from human plasma. Since 1979, homosexual men, including those from cities with reported AIDS cases, have been the source for much of this plasma. Vaccine produced from these sources has been used in various investigative studies since 1980 and has been commercially available since 1982. To date, no AIDS in vaccine recipients has been reported outside groups with high AIDS incidence. Specifically, no cases have occurred among the several thousand individuals, other than male homosexuals (primarily health care workers), who participated in vaccine studies from 1980 to date. In addition, no cases have been reported from the over 200,000 individuals who have received HBV vaccine since its general availability in July 1982. (The latent period for AIDS, if an infectious agent is involved, appears to be between 8 and 18 months.) Two homosexual men who participated in the original HBV vaccine field trials have developed AIDS. This occurrence is not significantly different from that observed among men who were screened for participation in these trials but who were ultimately not vaccinated. Furthermore, the manufacturing process for HBV vaccine includes several procedures that inactivate representative viruses of all known types (*1*). Thus, both current microbiologic and empiric data provide no support for the suggestion that HBV vaccine might carry an etiologic risk for AIDS.

Surveillance for reactions that may be caused by HBV vaccine is ongoing. The vaccine is recommended for groups at risk of HBV infection (*2*). Health care providers are encouraged to report illness following receipt of HBV vaccine through their local or state health departments to the Hepatitis Division, Center for Infectious Diseases, CDC.

Reported by Div of Hepatitis and Viral Enteritis, Center for Infectious Diseases, CDC; Immunization Practices Advisory Committee.

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1983 May 13;32:233–34

Human T-Cell Leukemia Virus Infection in Patients with Acquired Immune Deficiency Syndrome: Preliminary Observations

Recent evidence suggests that human T-cell leukemia virus (HTLV) infection occurs in patients with acquired immune deficiency syndrome (AIDS). HTLV has been isolated from peripheral blood T-lymphocytes from several patients with AIDS (*1*, *2*), and a retrovirus, related to but clearly distinct from HTLV, has been isolated from cells from a lymph node of a patient with lymphadenopathy syndrome (LAS) (*3*), a syndrome that may precede AIDS itself. Also, HTLV nucleic acid sequences have been detected by nucleic acid hybridization in lymphocytes from two (6%) of 33 AIDS patients (*4*). In addition, antibodies to antigens expressed on the cell surface of HTLV-infected lymphocytes have been detected by an indirect immunofluorescent technique in sera from 19 (25%) of 75 AIDS patients (*5*), including patients with Kaposi's sarcoma alone (10/34), *Pneumocystis carinii* pneumonia alone (7/30), or patients with both diseases (2/11). Similar antibodies were detected in six (26%) of 23 patients with LAS. Such antibodies were rarely found in sera collected from homosexual men in New York City who served as controls during a case-control study in the fall of 1981 (1/81), homosexual men from whom sera were collected in 1978 during visits to a Chicago venereal disease clinic (0/118), and blood donors from a mid-Atlantic state who gave blood in 1977 but were unselected for sexual preference (1/137).

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Editorial Note: HTLV agents are retroviruses that have recently been associated with certain types of adult T-cell lymphoreticular neoplasms of man (*6*). HTLV-1 has been associated with acute T-cell leukemia and a related, but clearly different, viral agent, HTLV-2, with "hairy-cell" T-cell leukemia.

Retroviruses are ribonucleic acid (RNA) viruses containing the enzyme, reverse transcriptase, which allows production of a deoxyribonucleic acid (DNA) copy of their RNA genome. The DNA copy can then be integrated into the genome of the cell. Infections with retroviruses other than HTLV have been associated with a variety of neoplastic diseases in animals including chickens, cats, cattle and gibbons. The feline retrovirus also causes immune suppression.

HTLV agents are the only presently known retroviruses associated with human diseases. Clinically, however, the diseases previously associated with HTLV in endemic areas do not resemble AIDS. Infections are thought rarely to result in malignancies. HTLV may spread from some infected persons to their very close contacts, and concern has been expressed that it may be transmissible by blood or blood derivatives (*7*). HTLV infects and immortalizes* T-helper lymphocytes, and the virus can be isolated from infected patients by co-cultivation of their lymphocytes with uninfected human T-lymphocytes.

In the above studies, the reported low frequency of detecting HTLV sequences may reflect depletion of infected T-helper lymphocytes, since patients initially positive for such sequences have had negative tests several months later (*4*).

HTLV-infected cells express specific virus structural and virus-induced cellular proteins. Antibodies reactive with these virus-specific proteins are moderately prevalent (12% of blood donors) in residents of southwest Japan, an area with a relatively high prevalence of adult T-cell leukemia, and in residents of some Caribbean Islands (4% of St. Vincent blood donors); they have rarely been found in healthy Americans or western Europeans, although these population groups have not been studied extensively.

While the above serologic findings associate AIDS with antibody to HTLV-specific cell surface-associated antigens, such antibodies were identified in only about one quarter of the AIDS patients tested. This relatively low frequency of antibody in AIDS patients might represent a lack of test sensitivity, too stringent criteria for positive tests, infection of AIDS patients with an agent related to but not identical with HTLV, nonspecific polyclonal B-cell responses, inability of many AIDS patients to mount antibody responses to these antigens, collection of sera from patients at improper times during disease evolution, or combinations of these and other yet-to-be identified factors. Alternatively, HTLV or an HTLV-like agent might simply represent yet another opportunistic agent in these multiply infected AIDS patients.

Further study is required to determine if any etiologic relationship exists between HTLV and AIDS.

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*The term, "immortalize," refers to the capacity of HTLV to alter a normal human cell so that the cell will reproduce indefinitely in appropriate media.

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1983 June 24;32:309—11

Acquired Immunodeficiency Syndrome (AIDS) Update — United States

As of June 20, 1983, physicians and health departments in the United States and Puerto Rico had reported a total of 1,641 cases of acquired immunodeficiency syndrome (AIDS). These cases were diagnosed in patients who had Kaposi's sarcoma (KS) or an opportunistic infection suggestive of an underlying cellular immunodeficiency. Of these patients, 644 (39%) are known to have died; the proportion of patients with KS alone who have died (22%) is less than half that of patients with opportunistic infections who have died (46%). Fifty-five (3%) cases were diagnosed before 1981; 225 (14%), in 1981; 832 (51%), in 1982; and 529 (32%), to date in 1983. *Pneumocystis carinii* pneumonia (PCP) is the most common life-threatening opportunistic infection in AIDS patients, accounting for 51% of primary diagnoses; 26% of patients have KS without PCP, and 8% have both PCP and KS. Many of these patients may also have other opportunistic infections, and 15% of AIDS patients have such infections without KS or PCP. Over 90% of AIDS patients are 20-49 years old; almost 48% are 30-39 years old. Cases have occurred in all primary racial groups in the United States. Only 109 (7%) cases have been reported in women.

Groups at highest risk of acquiring AIDS continue to be homosexual and bisexual men (71% of cases), intravenous drug users (17%), persons born in Haiti and now living in the United States (5%), and patients with hemophilia (1%)*. Six percent of the cases cannot be placed in one of the above risk groups; approximately half of these are patients for whom information regarding risk factors is either absent or incomplete. The remainder includes, in order of decreasing frequency, patients with no identifiable risk factors, heterosexual partners of AIDS patients or persons in risk groups, recipients of blood transfusions, and KS patients with normal immunologic studies. Of the 109 cases among females, 52% occurred among drug users and 9% among Haitians; for 39%, the risk group is unknown.

In addition to the 1,641 reported AIDS cases, 21 infants with opportunistic infections and unexplained cellular immunodeficiencies have been reported to CDC. Infant cases are recorded separately because of the uncertainty in distinguishing their illnesses from previously described congenital immunodeficiency syndromes.

Most cases continue to be reported among residents of large cities. New York City has reported 45% of all cases meeting the surveillance definition†; San Francisco, 10% of cases; and Los Angeles, 6% of cases. Cases have been reported from 38 states, the District of Columbia, and Puerto Rico (Figure 1).

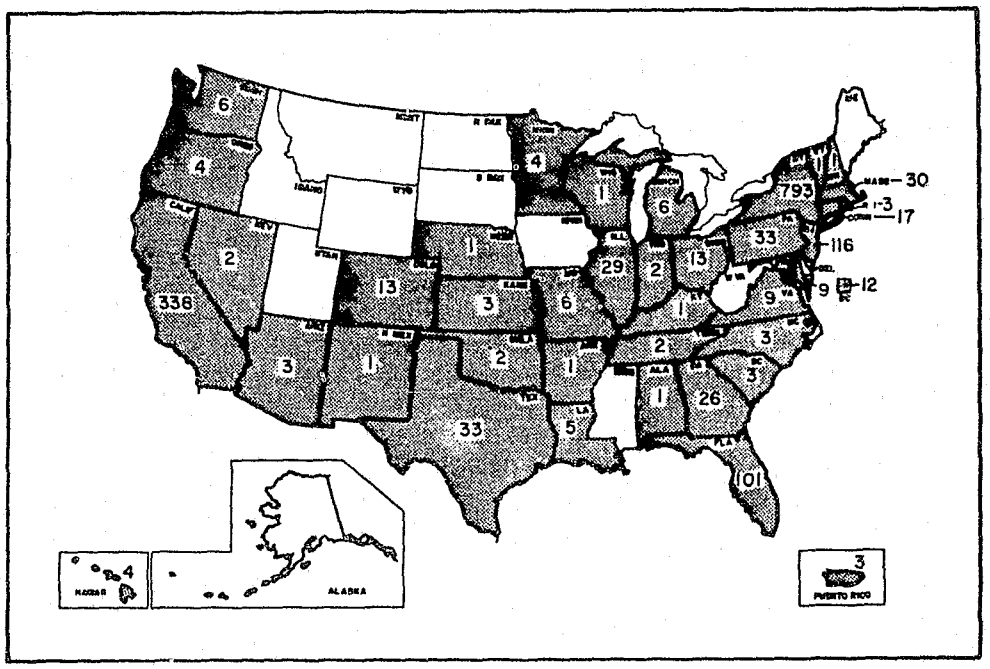
Reported by State and Territorial Epidemiologists; AIDS Activity, Center for Infectious Diseases, CDC.

Editorial Note: During 1982 and early 1983, city and state health departments throughout the United States began assuming an increasingly active role in the surveillance and investigation of AIDS. At the annual Conference of State and Territorial Epidemiologists in May 1983, the group affirmed the urgency of AIDS as a public health problem and passed, as one part of a resolution on AIDS, the recommendation that AIDS be added to the list of notifiable diseases in all states. The method of making a disease notifiable varies markedly in different states, ranging from a change in state law to regulatory action by the Board of Health or executive decision by the health officer. Several states have already made AIDS notifiable; other states

*The risk groups listed are hierarchically ordered; cases with multiple risk factors are tabulated only in the risk group listed first.

†For the limited purposes of epidemiologic surveillance, CDC defines a case of AIDS as a reliably diagnosed disease that is at least moderately indicative of an underlying cellular immunodeficiency in a person who has had no known underlying cause of cellular immunodeficiency nor any other cause of reduced resistance reported to be associated with that disease.

FIGURE 1. Acquired immunodeficiency syndrome (AIDS) cases meeting the surveillance definition reported to CDC, by state — United States



are taking similar action.

Case counts of patients with AIDS listed by cities or states may differ from those listed by CDC. The standard surveillance definition of AIDS does not apply to suspected subclinical or mild cases of AIDS—to the extent they occur—or to cases involving persistent generalized lymphadenopathy or other conditions in persons from high-risk groups. Some AIDS patients may seek treatment in cities other than those in which they reside and may be reported through health departments in cities where they are treated. CDC eliminates duplicate reports and assigns each patient to the city and state of residence at the time of reported onset of illness. In addition, the processing of case reports may result in a delay between diagnosis, reporting, and entry of a case into the registry at the different health departments or CDC.

Physicians aware of patients fitting the case definition for AIDS are requested to report such cases to CDC through their local or state health departments. AIDS patients who do not belong to any of the recognized risk groups or who are recipients of blood or blood products (including anti-hemophiliac factors) should be reported immediately.

The vast majority of cases continue to occur among persons in the major identified risk categories. The cause of AIDS is unknown, but it seems most likely to be caused by an agent transmitted by intimate sexual contact, through contaminated needles, or, less commonly, by percutaneous inoculation of infectious blood or blood products. No evidence suggests transmission of AIDS by airborne spread (*1*). The failure to identify cases among friends relatives, and co-workers of AIDS patients provides further evidence that casual contact offers little or no risk. Most of the 21 infants with unexplained immunodeficiency have been born to mothers belonging to high-risk groups for AIDS (*2*). If this syndrome is, indeed, AIDS, the occurrence in young infants suggests transmission from an affected mother to a susceptible infant before, during, or shortly after birth. Previously published guidelines to prevent the transmission of AIDS and precautions for health care and laboratory workers are still applicable (*1,3*).

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1983 July 15;32:358–60

An Evaluation of the Acquired Immunodeficiency Syndrome (AIDS) Reported in Health-Care Personnel — United States

As of July 11, 1983, physicians and health departments in the United States and Puerto Rico had reported a total of 1,831 patients meeting the CDC surveillance definition of the acquired immunodeficiency syndrome (AIDS) (*1*). Of these, four were reported to be health-care personnel not known to belong to groups at increased risk for AIDS. Onset of illness in these patients occurred between June 1981 and April 1983. The source of AIDS in these four patients is unclear, and none had documented contact with another AIDS patient. Additional cases have been reported in health-care personnel; however, these have either occurred in persons belonging to AIDS risk groups or in persons for whom information is insufficient to determine if they belong to such groups. The case histories for the four patients follow.

Patient 1: A 32-year-old black man living in Baltimore, Maryland, was in good health until January 1983, when he complained of lower abdominal discomfort, relieved by urination, and blood in his stools. Medical evaluation, which included a renal sonogram and an abdominal CAT scan, revealed no cause for his complaints, and his symptoms subsided without treatment. At the same time, he began to lose weight. On May 13, he presented to his private physician with complaints of fever and cough of 2-3 days' duration. His temperature was 37.8 C (100 F). Chest x-ray showed a questionable right upper lobe infiltrate, and he was given oral erythromycin.

On May 21, 1983, the patient went to a Baltimore hospital, where he was found to have bilateral pulmonary infiltrates. He was hospitalized and sulfamethoxazole/trimethoprim was added to his therapy. On May 24, a transbronchial lung biopsy showed *Pneumocystis carinii* pneumonia (PCP); results of immunologic studies were consistent with AIDS. Despite the addition of pentamidine isethionate to his therapy, his condition worsened, and he died on June 2. At autopsy, no evidence of malignancy was found.

The patient had worked for the housekeeping department of a hospital since 1968. Beginning in August 1981, he worked exclusively in the ambulatory surgery area, where his duties included removal of surgical drapes and disposable surgical equipment, which were often contaminated with blood. Reportedly, he usually did not wear gloves.

On February 26, 1982, the patient went to the employee-health nurse for treatment of a needlestick injury. The patient stated that, while disposing of a cardboard box containing used needles, he had been stuck on the hand by a needle protruding from the box. Blood samples were drawn for hepatitis B virus serologic tests, and a single 2-ml dose of immune globulin (IG) was given intramuscularly. (IG therapy has not been reported in other AIDS patients not belonging to known risk groups.) The serologic tests were positive for antibody to hepatitis B surface antigen but negative for the antigen. No other injuries had been recorded on his employee-health record.

When interviewed by his physicians, the patient denied homosexual activity, intravenous (IV) drug use, foreign travel, or transfusion. After the patient's death, interviews by the Baltimore City Health Department of his family and friends confirmed his history. Four of his female sexual partners were interviewed, and all denied IV drug use; none had a history compatible with AIDS. The patient had no history of treatment for venereal diseases, and serologic tests for syphilis (RPR, MHA-TP, FTA-ABS), done during his hospitalization for PCP, were negative.

No patient meeting the CDC surveillance definition of AIDS was reported to have been seen at the hospital where patient 1 worked. In June 1982, 4 months after the needlestick injury and 7 months before patient 1 became ill, a homosexual man with a history of chronic, unexplained lymphadenopathy underwent a lymph node biopsy in the ambulatory surgery area of the hospital. Although patient 1 was working in this area on the day of the biopsy, the extent of his contact, if any, with the lymphadenopathy patient or materials used in the biopsy procedure is unknown.

Patients 2-4: Less epidemiologic information is available for patients 2-4 than for patient 1. They appear either more likely to have belonged to AIDS risk groups or less likely to have had exposure to blood than patient 1. All had immunologic studies consistent with AIDS.

Patient 2, a 32-year-old American Indian woman, was living in New Jersey when she became ill in 1981. She was found to have PCP, recovered following treatment, but died of cerebral toxoplasmosis in 1982. She had worked in a hospital laundry since 1980. During her employment, a patient with possible AIDS had been admitted to the hospital where she

worked, but she had no direct contact with this person. Although she used marijuana, cocaine, and mescaline, she denied IV drug use. She also denied foreign travel, receipt of blood, and sexual contact with men who were bisexual or IV drug users. (This patient has been previously reported elsewhere [*2*].)

Patient 3, a 34-year-old Jamaica-born man, was living in Miami, Florida, when he became ill in 1982. He was found to have PCP and recovered following treatment. He had come to the United States in 1979 and had worked as a private-duty nurse in Miami since then. He denied contact with AIDS patients; a subsequent review of his work assignments showed that he had not cared for any patients reported to have AIDS. He did not recall ever having a needlestick injury. He also denied homosexual activity, IV drug use, and receipt of blood. One of his female sexual partners was interviewed. She was in good health and denied IV drug use. Another of his female partners could not be located.

Patient 4, a middle-aged man, was living in New York City when he became ill in 1983. He was found to have PCP and recovered following treatment. He worked as a nurse's aide in the outpatient department of a hospital. AIDS patients had been seen at this hospital, but he apparently had not cared for any of them. In the past, he had had needlestick injuries and had received bites from patients, but could recall no such injuries for more than 2 years. Although he admitted to a homosexual encounter as an adolescent, he denied homosexual activity as an adult. He also denied IV drug use and receipt of blood and had no foreign travel since 1976. His serologic tests for syphilis (FTA-ABS) and hepatitis B virus (antibody to hepatitis B core antigen) were positive.

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Editorial Note: Although the etiology of AIDS remains unknown, epidemiologic evidence suggests that AIDS is caused by an infectious agent transmitted sexually or, less commonly, through exposure to blood or blood products. The disease has not been shown to be transmitted through casual contact with affected individuals.

Continuing surveillance of AIDS confirms earlier observations that 94% of patients come from the high risk groups previously described (*3*). The source of AIDS in the patients reported here is unknown. They denied belonging to known AIDS risk groups; however, the accuracy of data concerning sexual activity and IV drug use cannot be verified. None gave a history of caring for an AIDS patient, and none had known contact with blood of an AIDS patient; however, the possibility that these patients had forgotten or unknown exposure to the blood of AIDS patients cannot be entirely excluded.

These four cases provide no new information regarding occupational risk related to health-care personnel. Transmission of AIDS within hospitals has not been reported. Recommendations for prevention of AIDS in health-care personnel have been previously published (*4*), and these personnel are urged to become familiar with and adhere to these recommendations.

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1983 Aug 5;32:389–91

Update: Acquired Immunodeficiency Syndrome (AIDS) — United States

Between June 1981 and August 1, 1983, physicians and health departments in the United States and Puerto Rico reported 1,972 cases of acquired immunodeficiency syndrome (AIDS) meeting the surveillance definition*. These cases were diagnosed in patients who have Kaposi's sarcoma (KS) or an opportunistic infection suggestive of an underlying cellular immunodeficiency. Three hundred thirty-one cases (17% of the total) were reported to CDC over the last 6 weeks; the average of 53 cases reported per week during July 1983 compares with an average of 11 per week in July 1982 and 24 per week in January 1983 (Figure 1). Of all patients, 759 (38%) are known to have died; the mortality rate for patients with opportunistic infections continues to be over twice that of patients with KS alone. *Pneumocystis carinii* pneumonia (PCP) is the most common life-threatening opportunistic infection in AIDS patients; many of the patients may have multiple opportunistic infections, either sequentially or simultaneously. Of the reported cases, 71% have homosexual or bisexual orientation; 95% of the patients with KS are in this group.

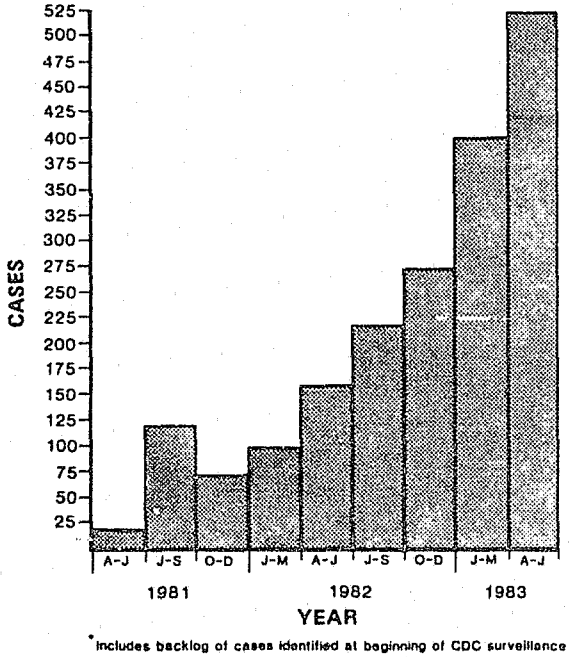
Over 90% of AIDS patients are 20-49 years old; almost 47% are 30-39 years old. Cases have occurred in all primary racial groups in the United States. One hundred twenty-nine (7%) cases have been reported in women; the ratio of male to female patients (14:1) has been almost constant over the last year. Most cases are reported among residents of large cities. New York City has reported 44% of all cases meeting the surveillance definition; San Francisco, 10% of cases; and Los Angeles, 6% of cases. Cases have been reported from 39 states, the District of Columbia, and Puerto Rico (Figure 2).

Reported by city, state, and territorial epidemiologists; AIDS Activity, Center for Infectious Diseases, CDC.

Editorial Note: To date, CDC has been notified that at least 18 states and territories have made AIDS reportable, and approximately 26 have introduced or are considering measures to make it reportable. Some states that have not taken specific action have cancer registries or already require many opportunistic infections to be reported. Physicians aware of patients fitting the case definition for AIDS are requested to report such cases through their local or

*For the limited purposes of epidemiologic surveillance, CDC defines a case of AIDS as a reliably diagnosed disease that is at least moderately indicative of an underlying cellular immunodeficiency in a person who has had no known cause of underlying cellular immunodeficiency or any other underlying reduced resistance reported to be associated with that disease.

FIGURE 1. Cases of acquired immunodeficiency syndrome (AIDS), by quarter of report — United States, second quarter 1981 — second quarter 1983

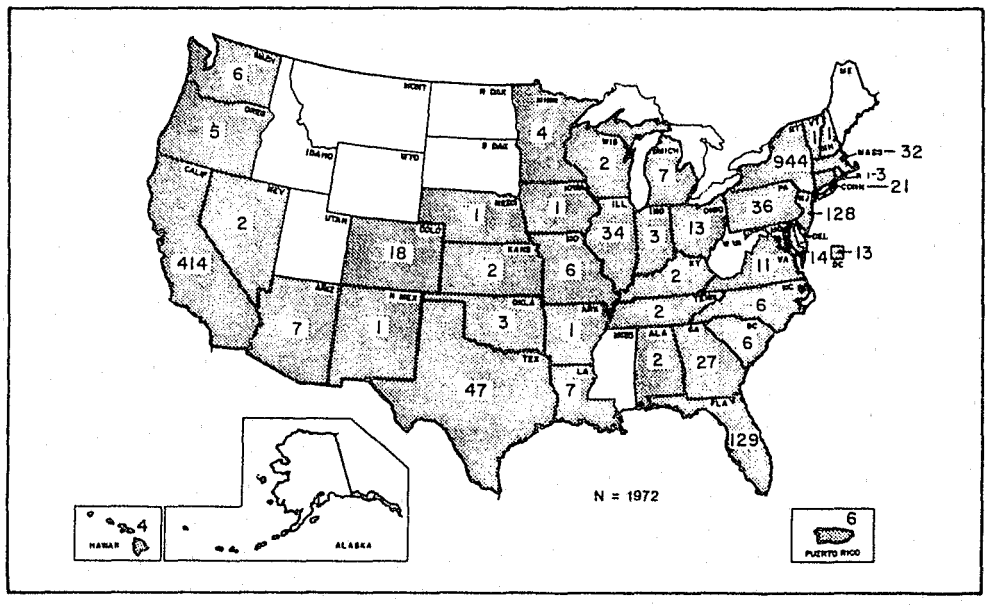


*Includes backlog of cases identified at beginning of CDC surveillance

state health departments. AIDS patients who do not belong to any of the recognized risk groups or who are recipients of blood or blood products (including anti-hemophiliac factors) should be reported immediately. CDC will soon make available a reporting format by which patients' names need not be sent to CDC.

Concern has been expressed about potential transmission of AIDS from hospitalized patients to health-care personnel (*1*). Although no instance of direct transmission has been

FIGURE 2. Acquired immunodeficiency syndrome (AIDS) cases reported to CDC, by state — United States, as of August 1, 1983



reported (*2*), accidental needlestick injuries or similar types of accidents occasionally occur. To evaluate the possible risk of AIDS transmission after such accidents, the Hospital Infections Program, CDC, in cooperation with several state health departments, has initiated a study at selected hospitals of health-care personnel who have had documented parenteral or mucous membrane exposure to blood of definite or suspected AIDS patients. This study is being expanded to include additional hospitals. Hospital infection control staff who have been notified of these types of personnel exposures in their hospitals and wish to obtain additional information about participation in the study should contact the Hospital Infections Program, (404) 329-3406.

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Acquired Immunodeficiency Syndrome (AIDS): Precautions for Health-Care Workers and Allied Professionals

Acquired immunodeficiency syndrome (AIDS) was first recognized in 1981. The epidemiology of AIDS is consistent with the hypothesis that it is caused by a transmissible infectious agent (*1-3*). AIDS appears to be transmitted by intimate sexual contact or by percutaneous inoculation of blood or blood products. There has been no evidence of transmission by casual contact or airborne spread, nor have there been cases of AIDS in health-care or laboratory personnel that can be definitely ascribed to specific occupational exposures (*4*).

CDC has published recommended precautions for clinical and laboratory personnel who work with AIDS patients (*5*). Precautions for these and allied professionals are designed to minimize the risk of mucosal or parenteral exposure to potentially infective materials. Such exposure can occur during direct patient care or while working with clinical or laboratory specimens and from inadvertent or unknowing exposure to equipment, such as needles, contaminated with potentially infective materials. Caution should be exercised in handling secretions or excretions, particularly blood and body fluids, from the following: (1) patients who meet the existing surveillance definition of AIDS (*1*); (2) patients with chronic, generalized lymphadenopathy, unexplained weight loss, and/or prolonged unexplained fever when the patient's history suggests an epidemiologic risk for AIDS (*1,2*); and (3) all hospitalized patients with possible AIDS.

These principles for preventing AIDS transmission also need to be adopted by allied professionals not specifically addressed in the previous publications but whose work may bring them into contact with potentially infective material from patients with the illnesses described in the above three groups.

The following precautions are recommended for those who provide dental care, perform postmortem examinations, and perform work as morticians when working with persons with histories of illnesses described in the above three groups:

DENTAL-CARE PERSONNEL

1. Personnel should wear gloves, masks, and protective eyewear when performing dental or oral surgical procedures.
2. Instruments used in the mouths of patients should be sterilized after use (*5-9*).

PERSONS PERFORMING NECROPSIES OR PROVIDING MORTICIANS' SERVICES

1. As part of immediate postmortem care, deceased persons should be identified as belonging to one of the above three groups, and that identification should remain with the body.
2. The procedures followed before, during, and after the postmortem examination are similar to those for hepatitis B. All personnel involved in performing an autopsy should wear double gloves, masks, protective eyewear, gowns, waterproof aprons, and waterproof shoe coverings. Instruments and surfaces contaminated during the postmortem examination should be handled as potentially infective items (*5-7*).
3. Morticians should evaluate specific procedures used in providing mortuary care and take appropriate precautions to prevent the parenteral or mucous-membrane exposure of personnel to body fluids.

These and earlier recommendations outline good infection control and laboratory practices and are similar to the recommendations for prevention of hepatitis B. As new information becomes available on the cause and transmission of AIDS, these precautions will be revised as necessary.

Reported by AIDS Activity, Div of Host Factors, Div of Viral Diseases, Hospital Infections Program, Center for Infectious Diseases, Office of Biosafety, CDC

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1983 Sept 9;32:457–8, 464

An Evaluation of the Immunotoxic Potential of Isobutyl Nitrite

Initial epidemiologic studies indicated that the use of inhalant drugs, such as amyl nitrite, isobutyl nitrite (IBN), and butyl nitrite, may be a risk factor for acquired immunodeficiency syndrome (AIDS) (*1,2*). Because the immunotoxic potential of these drugs was unknown, CDC undertook an immunotoxicologic evaluation of one of the most commercially available inhalants—IBN.

Balb/c mice were exposed to IBN at vapor concentrations of 20, 50, and 300 parts per million (ppm) for 6.5 hours a day, 5 days a week, for 3, 7, 13, or 18 weeks. At selected intervals, mice exposed to either 50 or 300 ppm of IBN were removed from the exposure chambers and tested for immunocompetency by the following assays: 1) antibody-producing cells were counted by localized hemolysis in gel assay (Jerne Plaque Assay) (*3*) 4 days after the mice had been immunized intraperitoneally with sheep erythrocytes; 2) radiometric skin testing with PPD (purified protein derivative) was performed 21 days after immunization with Freund's complete adjuvant (*4*); 3) the lymphocyte blast transformation (LBT) assay was performed by using splenic lymphocytes stimulated at several concentrations of the following mitogens: phytohemagglutinin, concanavalin A, pokeweed mitogen, or lipopolysaccharide. Each assay was performed on at least 10 (five male, five female) exposed animals and 10 control animals each time, and, except for the skin testing, assays for each animal were done in replicates of three (plaque assay) or four (LBT).

In addition to the immunocompetency testing, all animals were weighed weekly; their spleens, thymuses, and livers were weighed at necropsy, when hematologic measurements, including white-cell counts, red-cell counts, differential white-cell counts, and methemaglobin levels, were also determined. Fifteen major organs were removed and processed for histologic and pathologic analysis.

None of the animals exposed to IBN showed any evidence of immunotoxic reactions. Methemaglobinemia was noted in animals exposed to 300 ppm of IBN, and some evidence of thymic atrophy, possibly stress-related, was found in this group. All detailed histologic examinations have not been completed.

Reported by Immunology Section, Laboratory Investigations Br, Div of Respiratory Disease Studies; Chronic Toxicology Section, Experimental Toxicology Br, Div of Biomedical and Behavioral Sciences, National Institute of Occupational Safety and Health; AIDS Activity and Div of Host Factors, Center for Infectious Diseases; Office of the Director, Center for Environmental Health, CDC.

Editorial Note: Aliphatic nitrites, such as IBN, are commercially available as room odorizers but are commonly used as inhalant "street" drugs. The results of the present study, as well as the occurrence of AIDS among populations not commonly using inhalant nitrites, suggests that these drugs are not responsible for the basic immune defects characteristic of AIDS.

Although the data obtained in this study indicate that IBN was not immunotoxic for mice, these drugs do have toxic effects. They have been shown to be mutagenic in vitro (*5*) and are highly flammable. Reported side effects include: dizziness, headache, tachycardia, syncope, hypotension, and increased intraocular pressure; nitrites have also been associated with methemoglobinemia and, rarely, sudden death (*6*). Nitrite inhalants do not appear to be implicated as a cause of the immunosuppression seen in AIDS, but their role as a cofactor in some of the illnesses found in this syndrome has not been ruled out.

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Update: Acquired Immunodeficiency Syndrome (AIDS) — United States

As of September 2, 1983, physicians and health departments in the United States and Puerto Rico had reported 2,259 persons with acquired immunodeficiency syndrome (AIDS) who met the surveillance case definition.* Of these, 917 (41%) are known to have died. Fifty-eight (3%) cases were diagnosed before 1981; 231 (10%) in 1981; 883 (39%) in 1982; and 1,087 (48%) to date in 1983. *Pneumocystis carinii* pneumonia (PCP) is the most common life-threatening opportunistic infection in AIDS patients, accounting for 52% of primary diagnoses; 26% of patients have Kaposi's sarcoma (KS) without PCP, and 7% have both PCP and KS. Many of these patients may also have other opportunistic infections, and 15% of AIDS patients have such infections without KS or PCP. The proportion of patients with each of these primary diagnoses has remained relatively constant during the last 12 months, although the proportion with KS has decreased slightly, and the proportion with opportunistic infections other than PCP has increased from approximately 10% of all cases a year ago. Cases have occurred in all primary racial/ethnic groups in the United States: 57% of those reported have been white, 26% black, 14% Hispanic, and 3% other or unknown. One hundred forty-seven (7%) cases have been reported in women.

Eighty-nine percent of patients with AIDS can be placed in groups† that suggest a possible means of disease acquisition: 71% are men with homosexual or bisexual orientations; 17% (including 51% of the women) have used intravenous (IV) drugs; and 1% are hemophiliacs. Of the other 11% of cases, means of disease acquisition is less clear, but in none of these cases does casual contact appear to be involved. This group of 11% includes cases for whom information about risk factors is either absent or incomplete (3% of total), and others whose risk and exposure factors are under investigation. The latter includes patients who were born in Haiti but are now living in the United States (5% of total). Also under investigation are heterosexual partners of persons with AIDS or persons at increased risk of AIDS (1% of total), and those exposed to blood transfusions (1% of total). Finally, some thoroughly investigated cases belong to none of the above groups (1% of total).

Almost 47% of AIDS patients are 30-39 years old at diagnosis; an additional 22% are 20-29 and 40-49 years old, respectively. The age of drug-abuse patients clusters more tightly, with 81% being 20-39 years old. Compared with the average for all AIDS patients, Haitian entrants with AIDS tend to be younger (47% are 20-29 years old); the patients who received blood transfusions before developing AIDS tend to be older (median age more than 50 years old); and those with hemophilia tend to have a broader age range without clustering.

Most cases continue to be reported among residents of large cities. The New York City standard metropolitan statistical area (SMSA) has reported 42% of all cases meeting the surveillance definition; the San Francisco SMSA, 11% of cases; the Los Angeles SMSA, 7% of cases; and the Miami SMSA, 5% of cases. Cases have been reported from 41 states, the District of Columbia, and Puerto Rico (Figure 4).

Reported by City, State, and Territorial Epidemiologists; AIDS Activity, Center for Infectious Diseases, CDC.

Editorial Note: AIDS cases have been classified into groups at greatest risk of acquiring the disease. Classification is an essential element of any epidemiologic investigation and serves such purposes as formulating prevention recommendations, providing direction for research, and identifying medical needs. However, the classification of certain groups as being more closely associated with the disease has been misconstrued by some to mean these groups are likely to transmit the disease through non-intimate interactions. This view is not justified by available data. Nonetheless, it has been used unfairly as a basis for social and economic discrimination.

The occurrence of AIDS cases among homosexual men, IV drug abusers, persons with hemophilia, sexual partners of members of these groups, and recipients of blood transfusions is consistent with the hypothesis that AIDS is caused by an agent that is transmitted sexually or, less commonly, through contaminated needles or blood. About 91% percent of reported cases have occurred in these patient groups. Among the remaining cases, there has been no evidence that the disease was acquired through casual contact with AIDS patients or with persons in population groups with an increased incidence of AIDS. AIDS is not known to be transmitted through food, water, air, or environmental surfaces.

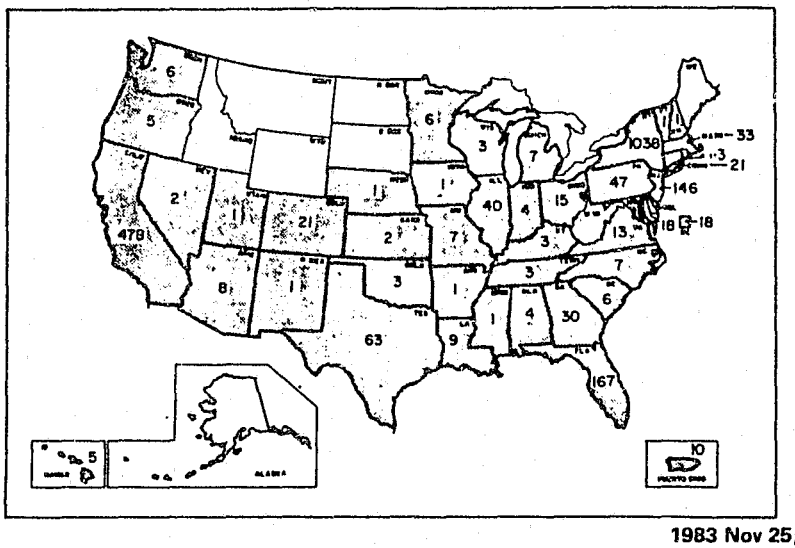
The great majority of persons in population groups with increased incidences of AIDS have not been affected by the disease. Until epidemiologic studies identify the subgroups

*For the limited purposes of epidemiologic surveillance, CDC defines a case of AIDS as a reliably diagnosed disease that is at least moderately indicative of an underlying cellular immunodeficiency in a person who has had no known underlying cause of cellular immunodeficiency and no other cause of reduced resistance reported to be associated with that disease.

†The groups listed are hierarchically ordered; cases with characteristics of more than one group are tabulated only in the group listed first.

within these populations that are truly at increased risk for acquiring AIDS, the classification system will lack precision. However, such classifications should not be construed to imply that usual social contact with such groups is involved in the transmission of AIDS.

FIGURE 4. Acquired immunodeficiency syndrome (AIDS) cases meeting the surveillance definition reported to CDC, by state — United States, as of September 2, 1983



1983 Nov 25;32:610–11

Acquired Immunodeficiency Syndrome (AIDS) — Europe

The following table (Table 3) summarizes the cases of AIDS reported by member countries of the European Region of the World Health Organization (WHO) as of October 1983 (*1,2*).

Reported by WHO Weekly Epidemiological Record, *1983;58:351.*

Editorial Note: As of November 21, 1983, 2,803 AIDS cases in the United States have been reported to CDC. The case definition used in other countries may differ slightly from that used by CDC.

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2. Based on data provided by the participants at the first meeting on AIDS organized by the WHO Regional Office for Europe (Aarhus, Denmark, October 19-20, 1983).

TABLE 3. AIDS cases reported by member countries of the European Region of WHO— as of October 20, 1983*

	Year of diagnosis						
Country	**Before 1979**	**1979**	**1980**	**1981**	**1982**	**1983**	**Total**
Austria						7	7
Belgium			2	4	8	24	38
Czechoslovakia					1	1	2
Denmark			1	2	4	6	13
Finland						2	2
France	6	1	5	5	30	47	94
German Democratic Republic							0
Fed. Republic of Germany	1	1			7	33	42
Greece							0
Ireland						2	2
Italy					2		2
Luxembourg							0
Netherlands					3	9	12
Norway						2	2
Poland							0
Spain				1	1	4	6
Sweden					1	3	4
Switzerland			2	3	5	7	17
United Kingdom				2	5	17	24
U.S.S.R.							0
Yugoslavia							0
Total	7	2	10	17	67	164	267

*Newly reported cases or revisions of case status according to new clinical information or better understanding of the AIDS definition.

1983 Dec 2;32:613–15

Update: Acquired Immunodeficiency Syndrome (AIDS) among Patients with Hemophilia — United States

In 1982, six hemophilia A patients who had developed *Pneumocystis carinii* pneumonia (PCP) and other opportunistic infections and who met the CDC case definition of AIDS were reported by CDC (*1,2*). As of November 30, 1983, physicians and health departments in the United States have reported a total of 21 AIDS cases among hemophilia patients—19 among patients with hemophilia A and two among patients with hemophilia B. In addition, seven cases from outside the United States meeting the CDC definition of AIDS in association with hemophilia A have been brought to CDC's attention. Of the hemophilia cases in the United States, one was diagnosed in 1981; eight, in 1982; and 12, to date in 1983 (Figure 1). Two patients are known to have had other risk factors for acquiring AIDS.

To date, no cases of Kaposi's sarcoma have been reported in association with hemophilia; each patient had an opportunistic infection suggestive of an underlying cellular immunodeficiency. PCP was the most common opportunistic infection in hemophilia patients with AIDS and has occurred in 20 (95%) of the U.S. patients. Many of these patients have had other opportunistic infections, principally candidiasis, cryptococcosis, toxoplasmosis, and histoplasmosis, or infections with cytomegalovirus and *Mycobacterium avium-intracellulare*. The geographic distribution has included 15 states, with four cases each in the Mid-Atlantic, South Atlantic, and East North Central regions, three in the East South Central region, two each in the New England and West North Central regions, and one each in the Pacific and Mountain regions. No state was the residence for more than two patients.

The National Hemophilia Foundation (NHF) and CDC have conducted a mail survey of 116 hemophilia treatment centers (HTCs) designated by the NHF in the 48 contiguous states, which estimated the prevalence of AIDS-associated diseases from 1978 to 1982 among approximately 6,700 hemophilia patients; a separate review of U.S. deaths reported to the National Center for Health Statistics as being hemophilia-related was also included in the survey. This survey failed to identify any diagnoses suggestive of AIDS occurring among hemophilia patients before the first case diagnosed in September 1981 or any cases other than those reported here. In addition to the 21 reported U.S. hemophilia patients with AIDS, some patients with hemophilia have been reported with unexplained, possibly AIDS-associated phenomena that do not fit the CDC criteria for an AIDS diagnosis, including lymphadenopathy syndrome (*3*), thrombocytopenic purpura (*4*), and Burkitt's lymphoma (*5*).

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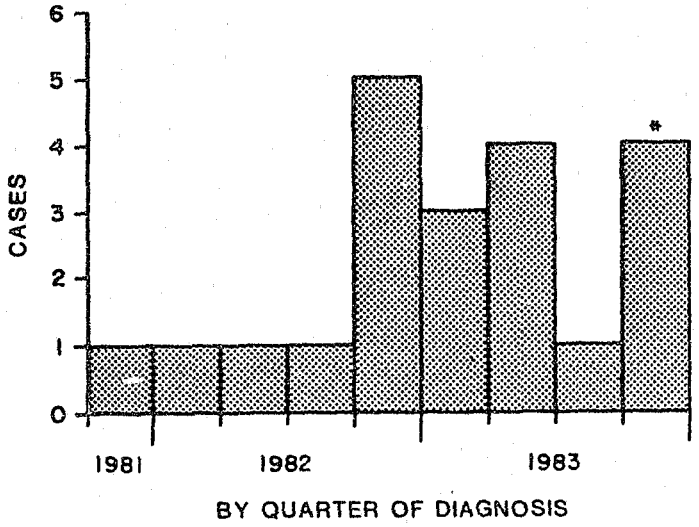
Editorial Note: Although the etiology of AIDS remains unknown, epidemiologic evidence suggests an infectious cause (*6, 7*). The possibility of blood or blood products as vehicles for transmission of AIDS to hemophilia patients is supported by the increased risk of AIDS in intravenous drug abusers (*8*) and reports of transfusion-associated AIDS cases (*9, 10*). Patients with hemophilia receive transfusions of anti-hemophilic factor and plasma factor concentrates prepared from pools of sera from 2,000 to 20,000 donors. Cryoprecipitate and plasma factor preparations are associated with the transmission of several known viral agents, including cytomegalovirus, hepatitis B virus, and the virus(es) of non-A, non-B hepatitis (*11*). However, at least nine U.S. hemophilia-associated AIDS patients also received other blood products in the 5 years preceding their AIDS diagnoses.

The NHF's Medical and Scientific Advisory Council has issued specific recommendations for managing hemophilia patients receiving blood and blood products (*12*). In addition, the U.S. Public Health Service has requested that persons at high risk of acquiring AIDS refrain from donating plasma and/or blood and that an extensive effort be undertaken to develop and

FIGURE 1. Acquired immunodeficiency syndrome (AIDS) among patients with hemophilia, by quarter of diagnosis — United States, October 1981-November 1983



evaluate the use of laboratory tests for screening blood or blood products obtained from individuals in high-risk groups (*13,14*). Physicians diagnosing opportunistic infections or unusual neoplasms in hemophilia patients who have not received antecedent immunosuppressive therapy are encouraged to report these findings to local or state health departments and to CDC.

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1983 Dec 9;32:635–36

Acquired Immunodeficiency Syndrome (AIDS) — Canada

As of November 25, 1983, Canada's Laboratory Centre for Disease Control (LCDC) has received reports of 51 cases of AIDS. Patients have ranged in age from 20 to 53 years, with 80% occurring in the 20- to 39-year age group. Forty-four (86%) were males. Forty-nine percent of all patients were homosexuals; however, the number of heterosexual patients (43%) is increasing; most are Haitians, and two are hemophilia patients.

Twenty-eight AIDS patients were Canadian-born; 17 were Haitian; and the remaining six were either born in other countries or of unknown birthplace. Twenty-three (45%) of these patients resided in Quebec; 17 (33%), in Ontario; six (12%), in British Columbia; two (4%), in Nova Scotia; one (2%), in Alberta; one (2%), in Manitoba; and one (2%), in Newfoundland. The onset of AIDS in three patients occurred in 1979; in four, in 1980; in eight, in 1981; in 17, in 1982; and in 17, in 1983 (up to November 25); dates of onset are unknown in the remaining two.

Symptoms, including prodromal complaints, were as follows: excessive weight loss (20%), generalized lymphadenopathy (16%), fever (15%), dyspnea (10%), oral thrush (10%), and skin lesions (5%). Kaposi's sarcoma (KS) was diagnosed in 11 (22%) patients, *Pneumocystis carinii* pneumonia (PCP) in 27 (53%), and other opportunistic infections in the remainder. KS and PCP were the only diagnoses in 14, while multiple infections with *Candida albicans*, cytomegalovirus, herpes simplex virus, *Toxoplasma gondii*, and *Cryptococcus neoformans* were found in 22 KS or PCP patients. The opportunistic infections group included combinations of these same organisms with one *Histoplasma capsulatum* infection. *Mycobacterium tuberculosis* was isolated in seven Haitian and two Canadian-born patients. One isolate each of *M. avium-intracellulare*, *M. terrae*, and *M. scrofulaceum* was reported.

The highest mortality rate (65%) occurred among patients of Haitian origin, with toxoplasmosis being the fatal infection in six of the 11 deaths. The mortality rate in the homosexual group was 48%, with PCP accounting for 50%.

Infants have not been included in these statistics because of the uncertainty in distinguishing their illnesses from previously described congenital immunodeficiency syndromes. Four such reports have reached LCDC, three involving children of Haitian origin and one possibly associated with exchange transfusions shortly after birth.

Reported in Canada Diseases Weekly Report, *1983;9:186-7, by S Handzel, MD, Bureau of Epidemiology, LCDC, Ottawa, Ontario.*

1984 Jan 6;32:688–91

Update: Acquired Immunodeficiency Syndrome (AIDS) — United States

As of December 19, 1983, physicians and health departments in the United States have reported a total of 3,000 patients who meet the surveillance definition for acquired immunodeficiency syndrome (AIDS) (*1*). Of these patients, 51% were reported to have had *Pneumocystis carinii* pneumonia (PCP) without Kaposi's sarcoma (KS); 26%, KS without PCP; 7%, both KS and PCP; and 16%, opportunistic infections without either KS or PCP. A total of 1,283 (43%) of reported patients are known to have died; the proportion of patients with KS alone who have died (23%) is less than half that of other AIDS patients (50%). Of the 3,000 patients, 90% have been between 20 and 49 years old. Fifty-nine percent of the cases have occurred among whites, 26% among blacks, and 14% among persons of Hispanic origin. Women account for 7% of the cases.

AIDS was first reported in the spring of 1981 (*2,3*), although patients with diagnoses meeting the surveillance definition for AIDS were, in retrospect, seen earlier (Figure 3). Half the 3,000 reported AIDS patients have been diagnosed since February 1983.

Cases have been reported from 42 states, the District of Columbia, and Puerto Rico (Figure 4). Eighty-one percent of the patients were residents of New York, California, Florida, or New Jersey at the time of their onsets of illness. Within these states, most cases have been reported among residents of large cities. The standard metropolitan statistical areas that have reported the greatest number of cases include: New York City (42% of all AIDS patients), San Francisco (12%), Los Angeles (8%), Miami (4%), and Newark (3%).

Groups at highest risk of acquiring AIDS continue to be homosexual and bisexual men (71% of cases) and intravenous drug abusers (17%); 12% of patients have other or unknown risk factors. These include persons born in Haiti and now living in the United States (5% of total cases), patients with hemophilia (1%), heterosexual contacts of persons at increased risk for acquiring AIDS (1%), and recipients of blood transfusions (1%).

The 31 patients with "transfusion-associated" AIDS include 18 men and 13 women who have no other known risk factor for AIDS and were transfused with blood or blood components within 5 years of their onsets of illness. These patients received transfusions between April 1978 and May 1983. Twelve are known to have died.

Not included in the 3,000 case reports are 42 children under the age of 5 years who meet a provisional case definition for pediatric AIDS (Table 1). All had life-threatening opportunistic infections; two also had KS (*4*). Twenty-nine (69%) are known to have died.

Twenty-nine of the children came from families in which one or both parents had a history of intravenous drug abuse (17 children) or were born in Haiti (12 children). Three of the 29 children, including one previously reported (*5*), have had a parent (two mothers, one father) with AIDS. Of the other 13 children, seven had transfusions with blood or blood components before their onsets of illness. One of these children received a platelet transfusion from a man who died of AIDS (*6*).

Reported by State and Territorial Epidemiologists; AIDS Activity, Center for Infectious Diseases, CDC.

Editorial Note: Although the rate of increase of diagnosed AIDS cases appears lower for the last half of 1983 than previously, trends in reported AIDS incidence must be interpreted cautiously. For example, several months often elapse between the diagnosis of an AIDS patient and the receipt of the case report at CDC; the number of reported cases lags behind the true incidence of disease. Also, during the past year, AIDS reporting has been decentralized, so that most cases are reported to state and local health departments, which forward reports to CDC. Final interpretation of trends in AIDS incidence for the last half of 1983 will, therefore, require several more months.

Because children are subject to a variety of congenital immunodeficiencies, confirmation of AIDS diagnoses in children is more complex than in adults. Laboratory testing to exclude congenital conditions is required. In future surveillance summaries, CDC will give the number of children reported to meet the provisional case definition for pediatric AIDS.

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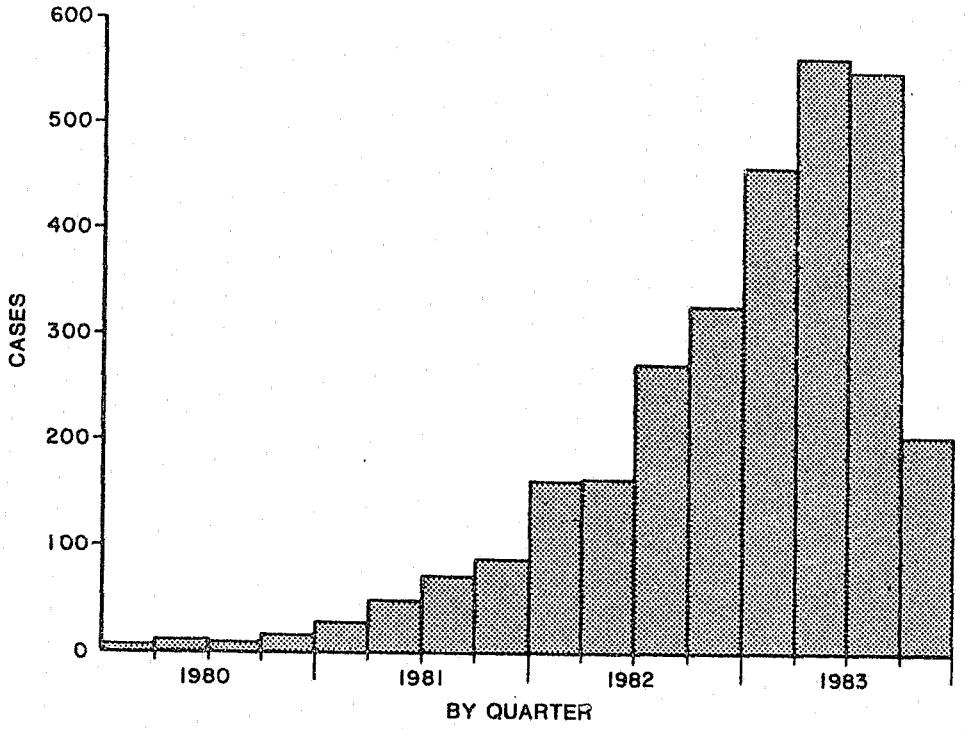
FIGURE 3. Acquired immunodeficiency syndrome (AIDS) cases, by quarter of diagnosis — United States, first quarter 1980 through December 19, 1983*



*Excludes 15 cases diagnosed before 1980 and 7 cases for which date of diagnosis was not reported.

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FIGURE 4. Acquired immunodeficiency syndrome (AIDS) cases reported to CDC, by state—United States, as of December 19, 1983

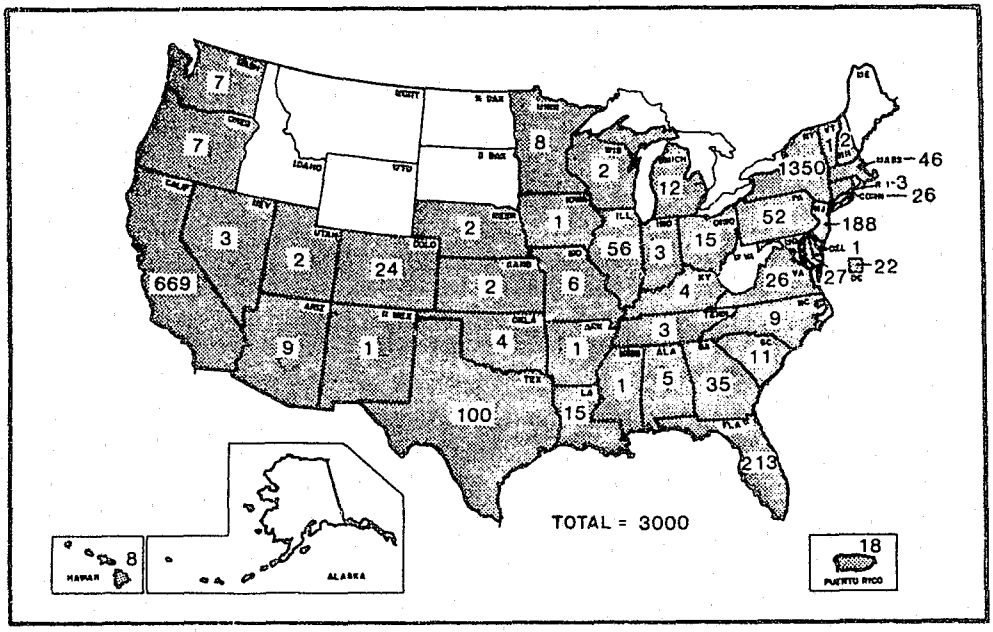

TABLE 1. Provisional case definition for acquired immunodeficiency syndrome (AIDS) in children

For the limited purposes of epidemiologic surveillance, CDC defines a case of pediatric acquired immunodeficiency syndrome (AIDS) as a child who has had:

1. a reliably diagnosed disease at least moderately indicative of underlying cellular immunodeficiency and
2. no known cause of underlying cellular immunodeficiency or any other reduced resistance reported to be associated with that disease.

The diseases accepted as sufficiently indicative of underlying cellular immunodeficiency are the same as those used in defining AIDS in adults (*1*) with the exclusion of congenital infections, e.g., toxoplasmosis or herpes simplex virus infection in the first month after birth or cytomegalovirus infection in the first 6 months after birth.

Specific conditions that must be excluded in a child are:

1. Primary immunodeficiency diseases—severe combined immunodeficiency, DiGeorge syndrome, Wiskott-Aldrich syndrome, ataxia-telangiectasia, graft versus host disease, neutropenia, neutrophil function abnormality, agammaglobulinemia, or hypogammaglobulinemia with raised IgM.*
2. Secondary immunodeficiency associated with immunosuppressive therapy, lymphoreticular malignancy, or starvation.

*Immunodeficiency. WHO Technical Report Series 1978;630.28-31.

1984 Feb 17;33:65–7

Severe Neutropenia during Pentamidine Treatment of *Pneumocystis carinii* Pneumonia in Patients with Acquired Immunodeficiency Syndrome — New York City

During November 1983, three patients at one New York City hospital who had the acquired immunodeficiency syndrome (AIDS) and *Pneumocystis carinii* pneumonia (PCP) developed severe neutropenia while being treated with pentamidine isethionate. Since August 1981, 23 other patients with AIDS and PCP had been treated with pentamidine at this institution. None developed neutropenia that could not be explained by the simultaneous administration of another drug.

Case 1: A 43-year-old male with recently diagnosed Kaposi's sarcoma (KS) was suspected of having PCP in late October 1983, based on symptoms of cough, dyspnea on exertion, a chest roentgenogram showing bilateral interstitial pulmonary infiltrates, and pulmonary-function tests showing a drop in arterial pO_2 with exercise. He was begun on sulfamethoxazole/trimethoprim (SXT) (20 mg trimethoprim/kg/day orally) as an outpatient. Before treatment, his white blood cell count (WBC) was 5,700/mm^3 (4,560 neutrophils/mm^3). After 9 days of SXT, he developed a maculopapular rash, an elevated serum glutamic-oxaloacetic transaminase (SGOT), an elevated serum creatinine, and neutropenia (WBC = 1,700/mm^3 with 816 neutrophils/mm^3). SXT was discontinued. The patient was admitted to the hospital 4 days later. Toluidine-blue and Gram-Weigert stains of a bronchoalveolar lavage showed *P. carinii* cysts, and the patient was started on pentamidine isethionate 4 mg/kg/day intravenously.* Two days before pentamidine was started, his WBC was 2,700/mm^3 (1,377 neutrophils/mm^3) but rose to 4,000/mm^3 at initiation of pentamidine. All other manifestations of SXT toxicity had resolved. The patient's WBC ranged between 3,200/mm^3 and 5,600/mm^3 during the first 5 days of treatment. He experienced transient flushing during the treatment infusion, which disappeared when the infusion time was increased from 45 to 90 minutes. On day 6 of pentamidine, he developed a fever but no thrombocytopenia or anemia. His WBC was 1,900/mm^3 and dropped to 300/mm^3 (36 neutrophils/mm^3) on day 7. The drug was discontinued, and gentamicin plus moxalactam were begun. During the 10 days after discontinuation of pentamidine, his WBC rose gradually to 2,800/mm^3 (868 neutrophils/mm^3), and a bone-marrow aspirate showed an increased myeloid to erythroid stem-cell ratio. The patient received no further therapy for PCP, and a repeat bronchoalveolar lavage revealed no *P. carinii*. His respiratory symptoms improved markedly. However, *Mycobacterium avium-intracellulare* was found in a blood culture that had been taken in late October, and the patient was treated with ansamycin. During the first 4 days of ansamycin, his WBC ranged from 2,800/mm^3 to 4,300/mm^3 (neutrophils 868 mm^3 to 1,785/mm^3) but fell to 1,900/mm^3 on day 5 when the drug was discontinued. The following day, his WBC was 1,500/mm^3, with 405 neutrophils/mm^3. Five days later, the patient was discharged with a WBC of 1,500/mm^3. Thereafter, he remained well, and during the 25 days after discharge, his WBC rose gradually to 2,200 mm^3.

Case 2: A 30-year-old male, referred for diarrhea and started on tetracycline as an outpatient, was admitted with fever, dyspnea, abnormal chest roentgenogram, and abnormal pulmonary-function tests. *P. carinii* cysts were seen on toluidine-blue and Gram-Weigert stains of a bronchoalveolar lavage, as well as on a methenamine-silver stain of a transbronchial biopsy and a Gram-Weigert stain of bronchial brushings. *Vibrio parahemolyticus* and *Giardia lamblia* were found in his stool. He was begun on SXT (20 mg trimethoprim/kg/day intravenously) and tetracycline. After 8 days of SXT, he developed a rash, and his WBC fell from a pretreatment level of 5,400/mm^3 (3,888 neutrophils/mm^3) to 1,900/mm^3. SXT and tetracycline were discontinued. The following day, his WBC was 1,800/mm^3, with 1,026 neutrophils/mm^3. Over the next 4 days, the rash disappeared, and his WBC rose to 2,900/mm^3 (2,175 neutrophils/mm^3). The patient was then started on pentamidine isethionate 2 mg/kg/day intravenously, which was increased to 4 mg/kg/day after 2 days. During the first 6 days of pentamidine, his WBC rose to 4,300/mm^3 but then gradually fell to 1,700/mm^3 (980 neutrophils/mm^3) by the 11th day of therapy. Pentamidine was discontinued, and his WBC fell to 1,600/mm^3 2 days later. He did not develop anemia or thrombocytopenia. However, his respiratory status had improved markedly, and he was discharged from the hospital. Quinacrine was begun for his *Giardia* infection as an outpatient.

*Since intravenous administration of pentamidine can be hazardous, CDC recommends that it be given intramuscularly whenever possible.

After 7 days, his WBC rose to 2,800/mm^3. He remained clinically well 2 weeks after all therapy was discontinued.

Case 3: A 29-year-old male was admitted with a history of fever and dyspnea for 2 weeks. *P. carinii* cysts were seen on a Gram-Weigert stain of a bronchoalveolar lavage. Since the patient gave a history of a diffuse pruritic rash when treated with SXT in August 1983 for an upper respiratory infection, he was started on pentamidine isethionate 4 mg/kg/day intravenously at the outset. With each infusion of the drug, he developed hypotension, flushing, and chills, which were controlled by increasing the infusion time from 1 to 3 hours and by pretreatment with meperidine and diphenhydramine. His WBC before pentamidine administration was 1,300/mm^3 with 910 neutrophils/mm^3. His WBC initially was stable but fell from 1,400/mm^3 on day 6 to 500/mm^3 (55 neutrophils/mm^3) on day 7. He developed a fever and was placed on gentamicin and ticarcillin. The following day, with a WBC of 400/mm^3 (8 neutrophils/mm^3), pentamidine was discontinued. Throughout this period, the patient did not develop anemia or thrombocytopenia. He was begun on SXT (15 mg trimethoprim/kg/day intravenously); the drug was continued for 11 days, during which his WBC rose to 1,700/mm^3. SXT was well tolerated, except for mild pruritis and an erythematous rash that disappeared when the drug was stopped. His chest film and respiratory symptomatology had improved markedly. The patient was discharged 12 days later and remained well at a follow-up appointment 7 days thereafter.

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Editorial Note: For each patient, this was the first admission for PCP, and each showed clinical recovery. In two, recovery occurred while on pentamidine therapy. Folinic acid, topical antifungal agents, benzodiazepines, and in one patient, meperidine and diphenhydramine, were administered during the period in which the pentamidine-associated neutropenia developed. Furthermore, despite intensive screening, only a few other infectious agents (*G. lamblia, V. parahemolyticus, M. avium-intracellulare*, and superficial *Candida*) complicated these cases. In two of these, neutropenia developed or worsened during the administration of other anti-infective drugs. Thus, despite the close temporal relationship between neutropenia and the administration of pentamidine and the gradual improvement of the neutropenia after withdrawal of the drug, it should not be presumed that these reactions were specifically related to pentamidine.

CDC's Parasitic Diseases Drug Service has received standard report forms for 179 patients with AIDS and PCP treated with pentamidine from January 1982 to September 1983. Of these, 26 (14.5%) developed leukopenia, with decreases in leukocyte counts from pre-therapy to mid- or post-therapy of 50% or more. In 12 instances, the physician discontinued pentamidine because of leukopenia, and in six of these 12, neutropenia or granuocytopenia was specifically mentioned as a complication. However, standard report forms ask only for WBC and are otherwise not sufficient to further characterize this phenomenon. CDC has sent a questionnaire to physicians for 114 randomly selected patients for whom pentamidine was released from October 1, to December 16, 1983, to obtain a more complete characterization and incidence estimate. In addition, physicians using pentamidine are encouraged to provide more detailed information on hematologic changes occurring during pentamidine treatment on the standard patient report form for pentamidine therapy.

Update: Treatment of Cryptosporidiosis in Patients with Acquired Immunodeficiency Syndrome (AIDS)

In November 1982, 21 patients with acquired immunodeficiency syndrome (AIDS) and severe, protracted diarrhea caused by cryptosporidiosis were reported; the report concluded that no effective treatment for cryptosporidiosis was known at that time (*1*). Since then, 21 additional AIDS patients with chronic cryptosporidiosis have been reported to CDC. Although no therapy has been consistently effective in treating them, preliminary reports suggest that a few may have responded to treatment with spiramycin (Rovamycine,* Rhône-Poulenc Pharma, Montreal) or the combination of quinine and clindamycin.

Since December 1982, physicians at the University of Miami, Florida, have used spiramycin to treat seven AIDS patients with chronic cryptosporidiosis; six other AIDS patients with cryptosporidiosis have been treated with spiramycin at five other institutions; and one non-AIDS patient with chronic cryptosporidiosis associated with a bone marrow transplant has received the drug. Thirteen of the 14 patients were adults; they received 1 g of spiramycin orally three or four times a day. The 14th patient, a 2-year-old child, received 500 mg orally twice a day. No adverse effects were attributed to the drug.

Three of the 13 AIDS patients were apparently cured after 3-4 weeks of spiramycin therapy (i.e., all three improved symptomatically, and intestinal biopsies and three successive stool examinations after therapy were negative). Follow-up 6-7 months after discontinuation of spiramycin revealed that all three remained asymptomatic. Two have subsequently died from causes related to their underlying immunodeficiency—one with Kaposi's sarcoma, the other with *Pneumocystis carinii* pneumonia.

In an additional three AIDS patients, gastrointestinal symptoms improved rapidly with spiramycin (in two cases, within 48 hours of starting the drug), but these patients continued to have *Cryptosporidium* in their stools. Spiramycin was continued for variable periods of time, but when therapy was stopped, diarrhea in each patient promptly recurred. On reinitiation of spiramycin, two of the three again improved, but the third continued to have severe diarrhea and has since died. One of the two surviving patients had *Cryptosporidium* detected in his stool at weekly intervals for the first 3½ months of therapy. The patient recently had three negative stools, and spiramycin was stopped; he now has been off therapy for 2 weeks and remains asymptomatic.

The remaining seven AIDS patients did not respond symptomatically or parasitologically to spiramycin. Three, however, died within 2-7 days after starting spiramycin. None of the deaths was attributed to spiramycin.

A non-AIDS patient with chronic cryptosporidiosis, acquired after receiving a bone marrow transplant, also improved with spiramycin therapy. She began spiramycin after suffering from severe, watery diarrhea and abdominal cramps for 6 weeks; within 24 hours, her cramps had resolved and her diarrhea had improved, and 2 weeks later, she was having one bowel movement a day. After 3 weeks of therapy, a stool examination was negative for *Cryptosporidium*.

CDC has also received six reports of AIDS patients and one bone marrow transplant patient with cryptosporidiosis who were treated with a combination of quinine and clindamycin, both given orally. Two patients did not respond after 7-14 days of therapy. In three others, the drugs were discontinued because of adverse effects; one developed a severe rash; another, severe vomiting; the third, thrombocytopenia. Symptoms improved in two of these three patients during the first few days of therapy. The sixth patient had acute cholecystitis and diarrhea associated with *Cryptosporidium* of the cystic duct and intestines. He received 300 mg of clindamycin and 250 mg of quinine, given orally four times a day. Within 2 days of initiating therapy, the patient's diarrhea resolved, but stool examinations after therapy continued to show occasional *Cryptosporidium*. A seventh patient, who developed chronic cryptosporidiosis after receiving a bone marrow transplant, also received oral quinine and clindamycin; the patient showed no clinical improvement despite 2 weeks of therapy.

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Editorial Note: *Cryptosporidium* is a protozoan parasite that causes severe, protracted diarrhea in immune suppressed patients. The first patient with human cryptosporidiosis was reported in 1976, and before 1982, only seven cases of human cryptosporidiosis had been

*Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

published. During 1982 and 1983, however, the number of reported cases has increased steadily (*2*).

The case reports described here are the first to offer encouragement in the treatment of cryptosporidiosis in immune suppressed patients. However, these reports must be viewed cautiously for several reasons. Most of the patients have had no response to spiramycin or the combination of clindamycin and quinine, and many of the patients who have responded symptomatically have not had parasitologic cures. Furthermore, treatment with clindamycin and quinine was associated frequently with adverse effects. Little is known about spiramycin's antiprotozoal activity. There are no published reports evaluating the efficacy of spiramycin against cryptosporidiosis in animals, and preliminary results by investigators at Auburn University, Alabama, suggest that spiramycin does not inhibit *Cryptosporidium* growth in tissue culture (*3*). Spiramycin is used in Europe and Canada to treat infections caused by another protozoan parasite, *Toxoplasma gondii,* but studies of spiramycin's efficacy for human toxoplasmosis have not included appropriate control groups, and animal studies have produced equivocal results (*4-7*).

Spiramycin is a macrolide antibiotic with an antimicrobial activity similar to erythromycin and clindamycin. It has been used in Europe and Canada for over 20 years to treat bacterial infections. Serious adverse effects from spiramycin are apparently rare, and no drug-associated deaths have been reported. Two patients have been reported who complained of nausea, sweating, giddiness, and paresthesia 1 hour after a single oral dose of 3 g; the symptoms subsided spontaneously within an hour (*8*). Mild to moderate diarrhea, including bloody diarrhea in two cases, has been reported in patients receiving various doses of spiramycin (*8-12*). Other reports of adverse reactions include one patient who developed a mild rash and others who developed contact dermatitis after handling spiramycin in animal feed (*13-16*).

The U.S. Food and Drug Administration (FDA) has not approved spiramycin for routine use, and therefore, the drug is not commercially available in the United States. Physicians in the United States who wish to obtain spiramycin should contact the FDA's Division of Anti-infective Drug Products, telephone (301) 443-4310.

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1984 Apr 6;33:181–2

Prospective Evaluation of Health-Care Workers Exposed via Parenteral or Mucous-Membrane Routes to Blood and Body Fluids of Patients with Acquired Immunodeficiency Syndrome

In August 1983, CDC initiated prospective surveillance of health-care workers with documented parenteral or mucous-membrane exposures to potentially infectious body fluids from patients with definite or suspected acquired immunodeficiency syndrome (AIDS). By December 31, 1983, 51 health-care workers with such exposures were enrolled in CDC's surveillance registry through the auspices of participating hospitals, other health-care institutions, and health departments in the United States.* None of these workers has developed signs or symptoms suggestive of AIDS. All but one of these workers had been followed for less than 12 months (see below).

Among the 51 exposed health-care workers studied, 19 (37%) have been reported from New York; nine (18%), from Texas; seven (14%), from Pennsylvania; five (10%) from New Jersey; and 11 (21%), from seven other states. Exposures occurred between April 1981 and November 1983. Length of follow-up of exposed health-care workers ranged from 1 month to 32 months by December 31, 1983 (mean 5.5 months). Twenty-four (47%) of the exposed workers were nurses; nine (18%) were physicians; five (10%) were phlebotomists; three (6%) were respiratory therapists; and the remaining 10 (20%) were health-care workers with less direct patient contact, such as laboratory and maintenance personnel. Eighty percent were white, and 75% were female. Ages ranged from 18 years to 51 years (mean 29 years).

The majority of exposures occurred in direct patient-care areas. Twenty-seven (53%) exposures occurred in patients' rooms or on wards, and 12 (24%) occurred in intensive-care units. Seven incidents (14%) took place in laboratories, and five (10%) occurred in operating rooms or morgues. The types of exposures were: needlestick injuries (65%); cuts with sharp instruments (16%); mucosal exposure (14%); and contamination of open skin lesions with potentially infective body fluids (6%). Post-exposure treatment consisted of local care only in 41%; administration of hepatitis B immune globulin (HBIG) alone or in combination with immune globulin (IG) or tetanus (Td) prophylaxis in 24%; IG alone or with Td in 31%; and Td only in 4%. Among the 12 exposed health-care workers receiving HBIG, three were exposed to AIDS patients reported positive for hepatitis B surface antigen (HBsAg).

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Editorial Note: The principal goal of this surveillance project is to evaluate the risk, if any, to health-care workers exposed to potentially infectious materials from AIDS patients. Epidemiologic evidence is consistent with the hypothesis that AIDS is caused by a transmissible infectious agent (*1,2*). AIDS appears to be transmitted by intimate sexual contact or by percutaneous inoculation of blood or blood products. There is no evidence of transmission through casual contact with affected individuals or by airborne spread, and there are no cases of AIDS among health-care workers that can definitely be ascribed to specific occupational exposures. The risk of AIDS transmission to health-care workers through percutaneous or mucosal inoculation of blood or body fluids from AIDS patients remains undefined, although currently available epidemiologic data suggest that the risk of transmission, if any, is small.

Recommended precautions for preventing AIDS in health-care workers have been published (*3-5*). These recommendations are designed to minimize the risk of mucosal or parenteral exposure to potentially infectious materials from AIDS patients. Based on descriptions of the incidents supplied to CDC, over one-third of the exposures among these 51 health-care workers might have been prevented by following recommended precautions. Health-care workers are urged to become familiar with and adhere to these recommendations.

No single form of post-exposure care appears to predominate among personnel reported

*Since December 31, 1983, preliminary reports have been received on an additional 50 exposed health-care workers.

to CDC, although local wound care only was the largest individual treatment category. Since AIDS patients are often in groups at high risk for hepatitis B, post-exposure prophylaxis should follow guidelines for immunoprophylaxis for viral hepatitis (*6*).

The enrollment phase of this surveillance project is designed to last 3 years. Institutions and investigators wanting information on participation in the project should contact CDC's Hospital Infections Program at (404) 329-3406.

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1984 May 4;33:225–26

Pentamidine Methanesulfonate to be Distributed by CDC

Pentamidine is used to treat patients with *Pneumocystis carinii* pneumonia (PCP) who have failed to respond or who have had adverse reactions to trimethoprim/sulfamethoxazole. Because of the unavailability of an approved product and the infrequent demand for the drug in the United States, CDC has supplied pentamidine through its Parasitic Disease Drug Service as an Investigational New Drug. The current incidence of acquired immunodeficiency syndrome (AIDS) has created an unprecedented demand for pentamidine (approximately 60% of AIDS patients develop PCP).

Starting in late May or early June 1984, CDC will distribute pentamidine methanesulfonate instead of pentamidine isethionate. Physicians and pharmacists should be aware of the change, because the dosages of the two pentamidine salts are calculated differently (Table 1). The change from one pentamidine salt to another is necessary because CDC has been unable to obtain assurances that the manufacturer of the isethionate salt can meet the increasing U.S. demand for pentamidine.

The indications for using pentamidine methanesulfonate are the same as those for pentamidine isethionate. Physicians in France and Canada have used pentamidine methanesulfonate to treat AIDS patients with PCP. Although results of such therapy have not been published, conversations by CDC with Canadian physicians concerning the outcomes of 13 AIDS patients with PCP treated with pentamidine methanesulfonate indicate that the efficacy and toxicity of the methanesulfonate salt appear similar to those of the isethionate salt. One published report has suggested that hypoglycemia occurs more commonly with pentamidine methanesulfonate than with pentamidine isethionate, but the number of patients described

TABLE 1. Comparison of pentamidine methanesulfonate to pentamidine isethionate

	Pentamidine isethionate	Pentamidine methanesulfonate
Manufacturer	May & Baker (England)	Specia (France)
FDA* status	Investigational New Drug	Investigational New Drug
Supplied as	Powder	Solution (3 ml/ampule)
Amount indicated on label	200 mg (of salt)/vial	120 mg (of base)/ampule
Equivalent pentamidine base	115 mg per vial	120 mg per ampule
Daily dose	4 mg (of salt)/kg body weight	2.3 mg (of base)/kg body weight (0.0575 ml/kg)

*U.S. Food and Drug Administration.

was small (*1*). The LD_{50} for mice is approximately the same for the two salts (*2*).

The doses of the two drugs are calculated differently because of the way the manufacturers have labeled their products (Table 1). Pentamidine isethionate is labeled to reflect the weight of salt present (pentamidine base moiety plus isethionate salt moieties), whereas pentamidine methanesulfonate is labeled according to the weight of only the pentamidine base present. Thus, 2.3 mg/kg of pentamidine base is equivalent to 4.0 mg/kg of pentamidine isethionate salt. Each ampule of pentamidine methanesulfonate solution contains the equivalent of 120 mg of pentamidine base dissolved in 3.0 ml of sterile water for injection. Expressed in terms of volume, the dose of pentamidine methanesulfonate is 0.0575 ml/kg.

The procedure for obtaining pentamidine methanesulfonate from CDC will be the same as that used in the past to obtain pentamidine isethionate.

Reported by Div of Anti-Infective Drug Products, National Center for Drug and Biologics, US Food and Drug Administration; Div of Parasitic Diseases, Center for Infectious Diseases, CDC.

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1984 May 18;33:270

U.S.-Manufactured Pentamidine Isethionate Cleared for Investigational Use

A U.S.-manufactured preparation of pentamidine isethionate has undergone satisfactory completion of chemical and biologic tests, and CDC is now able to include this preparation in its claimed investigational exemption for a new drug for treatment of *Pneumocystis carinii* pneumonia. The Investigational New Drug status for the U.S.-manufactured preparation makes it unnecessary for CDC to distribute the foreign-produced product (pentamidine methanesulfonate) described in the May 4, 1984, issue of the *MMWR* (33:225-6). The U.S. preparation is being synthesized by Aldrich Chemical Company, Milwaukee, Wisconsin, and packaged for pharmaceutical use by LyphoMed, Inc., Melrose Park, Illinois.

There are two minor differences between the LyphoMed-manufactured product and the previously used May & Baker preparation of pentamidine isethionate. First, the LyphoMed product contains more pentamidine per vial than the May & Baker product (300 mg, compared with 200 mg). Second, the two preparations differ in their physical appearance. May & Baker uses a "dry fill" manufacturing process that leaves a fluffy white powder in the vial, whereas LyphoMed uses a "wet fill" process, followed by lyophilization, leaving a dry "plug" of white powder at the bottom of the vial.

The dosage of the LyphoMed product is the same as for the May & Baker product (4 mg [salt]/kg body weight).

Reported by Div of Parasitic Diseases, Div of Host Factors, Center for Infectious Diseases, CDC.

1984 June 1;33:295–97

Declining Rates of Rectal and Pharyngeal Gonorrhea Among Males—New York City

The rates of rectal and pharyngeal gonorrhea for New York City males aged 15-44 years* has declined from 129 per 100,000 males in that age group in 1980 to 74/100,000 in 1983—the lowest level in the past 7 years. This decrease is most evident in the area with the highest rates—Manhattan—where reported rectal and pharyngeal gonorrhea rates declined from 485/100,000 in 1980 to 201/100,000 in 1983—a 59% decrease (Figure 1). In other areas of New York City, the rates of rectal and pharyngeal gonorrhea have declined slightly since 1980, but the initial rates outside Manhattan were much lower. Gonorrhea rates for females 15-44 years old have risen over the same period from 587/100,000 females in that age group to 624/100,000 in 1983 (Figure 1).

The majority of New York City rectal and pharyngeal gonorrhea was reported from one New York City Department of Health sexually transmitted disease (STD) clinic in Manhattan, whose patients are primarily homosexual males. At this clinic, culture testing for pharyngeal and rectal gonorrhea is provided to all males identified as being at risk for contracting gonorrhea due to same-sex contact. Based on analyses of second- and fourth-quarter data from each year, the percentage of positive rectal cultures declined from 30.3 in 1980 to 16.5 in 1983, and the percentage of positive pharyngeal cultures declined from 6.8% in 1980 to 2.4% in 1983 (Table 4). First clinic visits by males decreased by 4.3% from 18,434 in fiscal year 1980 to 17,635 in fiscal year 1983.

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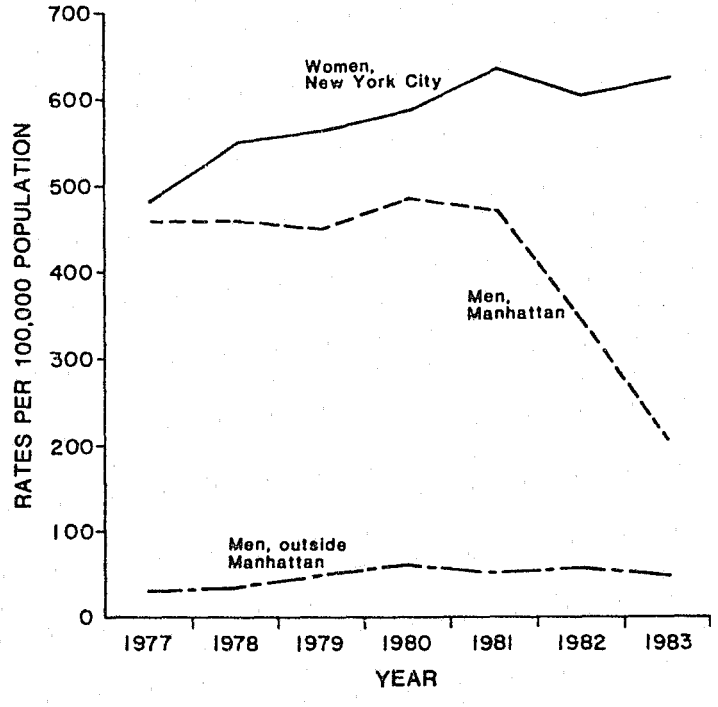
*1980 Census data.

Editorial Note: Since 1980, reported pharyngeal and rectal gonorrhea rates among New York City males 15-44 years old have shown consistent annual decreases, while the reported rates of gonorrhea for females in the same age group have increased during the same period.

FIGURE 1. Reported rates of rectal and pharyngeal gonorrhea among males 15-44 years old and rates (all sites) of gonorrhea among women 15-44 years old — New York City, 1977-1983



Rectal and Pharyngeal Gonorrhea — Continued

In Manhattan, the greatest decreases in male pharyngeal and rectal gonorrhea rates occurred in 1982 and 1983.

The percent decreases in infection were substantially greater than either the percent decreases in clinic attendance or total cultures taken. Hence, it is unlikely that changes in testing or clinic attendance account for a large portion of the declines. A similar decrease in gonorrhea incidence has been reported among homosexual males attending a public clinic in Denver, Colorado (*1*).

The major gonorrhea decreases in 1982 and 1983 coincide with the period of heightened awareness and concern about the incidence of acquired immunodeficiency syndrome (AIDS) among homosexual males. U.S. Public Health Service recommendations stress the importance of reducing the numbers of sexual partners for preventing AIDS among homosexual males (*2*). Similar recommendations have been developed and widely distributed by the American Association of Physicians for Human Rights and many local groups concerned with the health of homosexual males. Recently, a reduction of the number of sexual partners among homosexual males has been documented in Madison, Wisconsin (*3*). The substantial and persistent declines in gonorrhea among homosexual males in New York City suggest that prevention efforts have succeeded in reducing the incidence of this short-incubation-period sexually transmitted infection. Further sustained efforts should help in reducing the incidence of AIDS among homosexual males.

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TABLE 4. Results of rectal and pharyngeal cultures on males at a sexually transmitted diseases clinic — New York City, combined second and fourth quarters, 1979-1983

	Rectal			Pharyngeal		
Year	Total no. of cultures	No. of positive cultures	Percent positive	Total no. of cultures	No. of positive cultures	Percent positive
1979	3,850	940	24.4	3,384	184	5.4
1980	3,388	1,025	30.3	2,755	188	6 8
1981	4,078	1,062	26.0	3,717	163	4.4
1982	4,324	930	21.5	4,361	217	5.0
1983	3,202	529	16.5	3,359	81	2.4

1984 June 22;33:337—39

Update: Acquired Immunodeficiency Syndrome (AIDS) — United States

As of June 18, 1984, physicians and health departments in the United States had reported 4,918 patients meeting the surveillance definition for acquired immunodeficiency syndrome (*1,2*). Over 70% of the adult AIDS patients and nearly 80% of the pediatric patients have been reported since January 1983 (Figure 1). Although 2,221 (45%) of all reported patients are known to have died (45% of the adults and 68% of the children), more than 76% of patients diagnosed before July 1982 are dead.

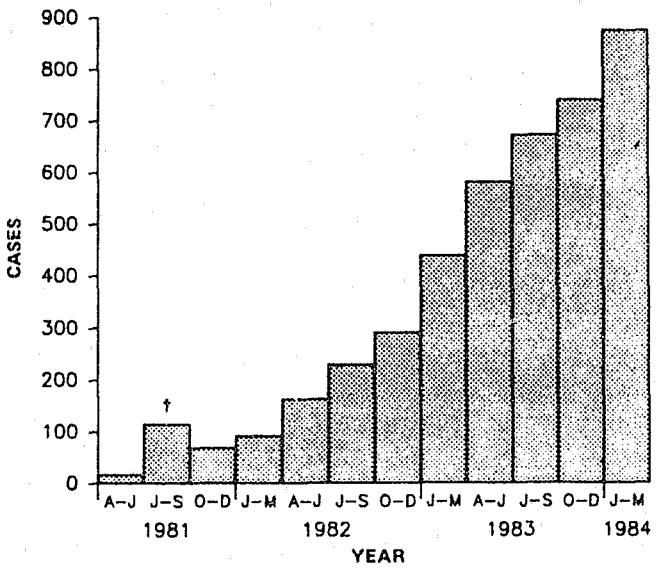
Adult patients: Among 4,861 adult AIDS patients, *Pneumocystis carinii* pneumonia (PCP) continues to be the most common opportunistic disease. Fifty-three percent of patients had PCP without Kaposi's sarcoma (KS); 24% had KS without PCP; 6% had both PCP and KS; and 17% had other opportunistic diseases without either PCP or KS. Of the 1,502 patients with KS, 1,396 (93%) have been homosexual or bisexual men. Ninety percent of adult AIDS patients are 20-49 years old, and 333 (7%) are women. Fifty-eight percent of the cases have occurred among whites; 25%, among blacks; and 14%, among persons of Hispanic origin.

Groups at highest risk of acquiring AIDS continue to be homosexual or bisexual men (72%

*Because of incomplete data, cases reported during the second quarter of 1984 are not shown.

†Includes backlog of cases identified at beginning of CDC surveillance

FIGURE 1. AIDS cases, by quarter of report — United States,* second quarter 1981 through first quarter 1984



of patients) and intravenous drug abusers (17%); 11% of patients have other or unknown risk factors. These include persons born in Haiti (4% of total cases), patients with hemophilia (1%), heterosexual partners of persons with AIDS or at increased risk for acquiring AIDS (1%), and recipients of blood transfusions (1%). The 52 adults with "transfusion-associated" AIDS have no other known risk factor for AIDS and were transfused with blood or blood components within 5 years of illness onset. Twenty-seven (52%) are known to have died. To examine possible trends in all patient groups, adult patients were divided into four equal categories based on date of report (Table 1). Except for a statistically significant decrease in the proportion of Haitian-born patients ($p < 0.001$), the distribution of cases by patient groups has remained relatively constant over time.

Seventy-eight percent of the adults were reported to be residents of New York, California, Florida, or New Jersey at the time of their onsets of illness. The remaining patients were reported from 41 other states, the District of Columbia, and Puerto Rico. Over time, the proportion of patients from New York has significantly decreased ($p < 0.001$), while the proportion for other states has significantly increased ($p < 0.001$) (Table 2).

Pediatric patients: Of the 57 patients under 5 years of age, 45 (79%) were reported to be residents of New York, Florida, California, or New Jersey at the time of their onsets of illness. Thirty-one (54%) of the 57 patients were male. Forty-four (77%) of the patients had PCP without KS; one (2%) had KS without PCP; two (4%) had both PCP and KS; and 10 (18%) had opportunistic infections without either PCP or KS. Twenty-nine percent of the pediatric patients are white; 50%, black; and 21%, of Hispanic origin. Of the 57 pediatric patients, 23 came from families in which one or both parents had a history of intravenous drug abuse; 13 had one or both parents who were born in Haiti; and 12 had transfusions with blood or blood components before their onsets of illness. Risk factor information on the parents of eight of the nine remaining patients is incomplete.

TABLE 1. Percent distribution of adult AIDS patients, by patient group, divided into quartiles based on date of report — United States

	Patient group							
Quartile*	Homosexual/ bisexual	IV drug user	Haitian-born	Hemophiliac	Transfusion recipient	Heterosexual sex partners	Other/ unknown	Total
1	72.3	16.4	5.0	0.9	0.4	1.1	3.9	100% (N = 1,216)
2	70.9	17.2	4.7	0.6	1.4	0.9	4.3	100% (N = 1,215)
3	72.4	18.0	3.2	0.4	1.2	0.6	4.2	100% (N = 1,215)
4	71.9	18.4	2.5	1.2	1.3	0.5	4.2	100% (N = 1,215)
Total	71.9	17.5	3.8	0.8	1.1	0.8	4.1	100% (N = 4,861)

*Quartile 1 contains cases reported during or before February 1983; quartile 2, between February 1983 and September 1983; quartile 3, between September 1983 and February 1984; and quartile 4, during or after February 1984.

TABLE 2. Percent distribution of adult AIDS patients, by residence at onset of illness, divided into quartiles based on date of report — United States

Quartile*	Residence at onset of illness					Total
	California	Florida	New Jersey	New York	Other	
1	20.1	6.7	6.7	49.5	17.0	100% (N = 1,216)
2	22.7	7.9	5.9	41.2	20.3	100% (N = 1,215)
3	25.4	6.8	6.7	37.0	24.1	100% (N = 1,215)
4	21.7	6.3	6.5	39.5	26.0	100% (N = 1,215)
Total	22.5	6.9	6.4	41.8	22.4	100% (N = 4,861)

*Quartile 1 contains cases reported during or before February 1983; quartile 2, between February 1983 and September 1983; quartile 3, between September 1983 and February 1984; and quartile 4, during or after February 1984.

Reported by State and Territorial Epidemiologists; AIDS Activity, Center for Infectious Diseases, CDC.

Editorial Note: Nationally, the reported incidence of AIDS among adults continues to increase but at an apparently slower rate than in early 1983. Despite this increase, the proportion of adult patients outside of population groups previously identified as being at increased risk for AIDS has remained constant.

Most adult AIDS patients continue to be reported from among residents of a small number of states. It is unknown whether the decrease in the proportion of patients reported from New York and the increase in reporting from other states represents a true change in geographic distribution of patients or increased recognition and reporting of this syndrome in other states. Forty-one states, the District of Columbia, and Puerto Rico have either made AIDS reportable or have legislation pending to do so.

The geographic distribution of AIDS in children under 5 years old is similar to that seen for adult AIDS patients and is compatible with transmission from affected mothers before or at birth or transmission through blood transfusion. In both children and heterosexual adults, AIDS is much more likely to present with opportunistic infections than with KS.

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1984 July 13;33:377—79

Antibodies to a Retrovirus Etiologically Associated with Acquired Immunodeficiency Syndrome (AIDS) in Populations with Increased Incidences of the Syndrome

Evidence implicates a retrovirus as the etiologic agent of acquired immunodeficiency syndrome (AIDS). Two prototype isolates have been described. One was isolated from the lymph node cells of a homosexual man with unexplained generalized lymphadenopathy, a syndrome associated with AIDS, and was termed lymphadenopathy-associated virus (LAV) (*1*). A morphologically similar T-lymphotropic retrovirus (HTLV-III) was isolated from lymphocytes of 26 (36%) of 72 patients with AIDS and from 18 (86%) of 21 patients with conditions thought to be related to AIDS (*2*). The isolation of retroviruses antigenically identical to LAV from a blood donor-recipient pair, each of whom developed AIDS, provides further evidence that this virus is the etiologic agent of AIDS and may be transmitted through blood transfusion (*3*).

Although direct comparative results have not been published, HTLV-III and LAV are likely to be the same virus because: they have the same appearance by electron microscopy; they are both lymphotropic and cytopathic for OKT-4 cells; isolates from American AIDS patients, when compared, were immunologically indistinguishable from LAV (*3*); serologic tests of a large number of specimens from patients with AIDS or related conditions show similar results when either of the prototype viruses is used as antigen (*4*); and preliminary results suggest that LAV and HTLV-III are at least highly related based on competitive radioimmunoassay of their core proteins (*5*).

Three basic serologic procedures are currently described for detection of antibody to HTLV-III/LAV: an enzyme-linked immunosorbent assay (ELISA) to whole disrupted virus (*6-8*); a radioimmunoprecipitation assay (RIPA) to the presumed major core protein (called p25) of

LAV (*9*); and assay of antibody to major viral antigens by the Western blot technique (*10, 11*). Sera from several high-risk populations are being tested by these techniques by the National Cancer Institute, the Institut Pasteur, and CDC, with the support of numerous collaborators. The objectives of these investigations are to determine the frequency of exposure to HTLV-III/LAV and to correlate seropositivity with current infection, clinical signs and symptoms, and prognosis.

Preliminary data suggest that serologic evidence of exposure to HTLV-III/LAV may be common in certain populations at increased risk for AIDS. Antibody to HTLV-III was detected by ELISA in sera from six (35%) of 17 American homosexual men without symptoms of AIDS (*6*). Sera from eight (18%) of 44 homosexual men without lymphadenopathy attending a venereal disease clinic in Paris had antibody detected by ELISA to LAV (*7*). Antibody prevalence to LAV (RIPA) has increased from 1% (1/100) in 1978 to 25% (12/48) in 1980 and 65% (140/215) in 1984 among samples of sera from homosexual men attending a sexually transmitted diseases clinic in San Francisco (*12*). Antibody prevalence among the above men tested in 1984 who had no symptoms or clinical signs of AIDS or related conditions was 55% (69/126) (*12*). In New York City, where the AIDS cases among intravenous (IV) drug users are concentrated, 87% (75/86) of recent heavy IV drug users without AIDS had antibody to LAV by ELISA, while over 58% (50/86) of the same group had antibody to LAV detected by RIPA (*13*). In contrast, fewer than 10% of 35 methadone patients from New York City had antibody to LAV detected by RIPA. All of these latter patients had been in treatment at least 3 years with greatly reduced IV drug usage (*14*). Seventy-two percent (18/25) of asymptomatic persons with hemophilia A in a home-care treatment program demonstrated antibody to LAV antigens utilizing the Western blot technique (*11*). All had used factor VIII concentrates from 1980 to 1982.

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Editorial Note: The high prevalence of antibody to HTLV-III/LAV among these groups and the increasing prevalence among homosexual men in San Francisco add further support to HTLV-III/LAV being the etiologic agent of AIDS. They further demonstrate that exposure to the virus is much more common than AIDS itself among populations with increased incidences of the disease. If AIDS follows the pattern of many other infectious diseases, host response to infection would be expected to range from subclinical to severe. Milder disease states for AIDS have been suspected, since the reported frequency of lymphadenopathy and immunologic abnormalities, conditions associated with AIDS, has also been high in these groups. These data, based on limited samples of high-risk groups, suggest the spectrum of response to infection with HTLV-III/LAV may be wide.

These serologic tests are sufficiently sensitive and specific to be of value in estimating the frequency of infection with HTLV-III/LAV in certain populations and for providing important information about the natural history of the disease in such groups. Less clear are the implications of a positive test result for an individual. For some, the result may be a false positive caused by infection with an antigenically related virus or nonspecific test factors. The determination of the frequency and cause of falsely positive tests is essential for proper interpretation of test results, but remains to be established, particularly in populations, such as blood donors who belong to no known AIDS risk groups, where the prevalence of true infection with HTLV-III/LAV is expected to be very low.

A positive test for most individuals in populations at greater risk of acquiring AIDS will probably mean that the individual has been infected at some time with HTLV-III/LAV. Whether the person is currently infected or immune is not known, based on the serologic test alone—HTLV-III/LAV has been isolated in both the presence and absence of antibody—but the frequency of virus in antibody-positive persons is yet to be determined. For seropositive individuals with mild or no signs of disease, including those in whom the virus can be demonstrated, the prognosis remains uncertain. The incubation period for the life-threatening

manifestations of AIDS may range from 1 year to more than 4 years (*15*).

Carefully planned and executed studies will be required to resolve these issues, and to clarify remaining questions about the natural history of AIDS and risk factors for transmission of the virus.

Until the usefulness of positive and negative serologic tests is fully established, all individuals in populations with increased incidences of AIDS, as well as those outside such groups with positive tests, should comply with the March 1983 Public Health Service recommendations for the prevention of AIDS to minimize the transmission of the syndrome (*16*). Abstention from IV drug usage and reduction of needle-sharing and other use of contaminated needles by IV drug users should also be effective in preventing transmission of the virus and of AIDS. There remains no evidence of transmission of AIDS through casual contact. Prevention measures should stress that transmission has been only through intimate sexual contact, sharing of contaminated needles, or, less frequently, through transfusion of blood or blood products.

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1984 Aug 3;33:442–44

Experimental Infection of Chimpanzees with Lymphadenopathy-Associated Virus

Evidence from two investigations indicates that the retrovirus etiologically linked to acquired immunodeficiency syndrome (AIDS) may infect chimpanzees (*Pan troglodytes*). In the first study, investigators from CDC and Emory University's Yerkes Regional Primate Research Center, Atlanta, Georgia, inoculated two chimpanzees with lymphadenopathy-associated virus (LAV) (*1*), one of two prototype retrovirus isolates etiologically associated with AIDS (*2*). Both animals were virologically and serologically negative before inoculation; both were injected simultaneously with concentrated virus and autologous lymphocytes that had been infected in vitro with LAV. Both animals were immunostimulated concomitantly by inoculation of diphtheria-tetanus toxoid and pneumococcal vaccine. One animal received human lymphocytes as an additional immunostimulant.

Six days after inoculation, a retrovirus identified as LAV by reverse transcriptase assay, direct immunofluorescence, p25 competitive radioimmunoprecipitation, and electron micros-

copy was identified from peripheral lymphocytes of both animals. The virus was isolated from both animals from six consecutive lymphocyte specimens obtained every 2-4 weeks. The most recent specimens were obtained more than 4 months after inoculation. Antibody to the major core protein (p25) of LAV was first detected 3 months after inoculation and was again present at 4 months. In both animals, five consecutive postinoculation T_4/T_8 ratio determinations have shown an apparent downward trend, although values are significantly below normal in only one. No clinical illness has been detected in the animals, and physical examinations have remained normal.

In the second study, investigators at the National Institutes of Health (NIH) and Southwest Foundation for Biomedical Research have found evidence of transmission of HTLV-III to two chimpanzees receiving human plasma from an individual with the lymphadenopathy syndrome. Evidence for infection includes anti-HTLV-III seroconversion, depression of T_4/T_8 ratios, and, in one animal, the development of severe, prolonged lymphadenopathy coincident with seroconversion.

Reported by H McClure, DVM, B Swenson, DVM, F King, PhD, Yerkes Regional Primate Research Center, Emory University, Atlanta, Georgia; J-C Chermann, PhD, F Barre-Sinousi, PhD, L Montagnier, MD, Institut Pasteur, Paris, France; J Eichberg, Southwest Foundation for Biomedical Research, San Antonio, Texas; C Saxinger, R Gallo, National Cancer Institute; H Alter, H Masur, A Macher, Clinical Center, C Lane, A Fauci, National Institute of Allergy and Infectious Diseases, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, Maryland; Div of Viral Diseases, Div of Host Factors, Center for Infectious Diseases, CDC.

Editorial Note: Primate transmission experiments have been under way at CDC and NIH for some time. LAV and HTLV-III, as well as human AIDS tissue, have been inoculated into several species of primates, including marmosets, rhesus monkeys, and chimpanzees. Except for some lymphocyte changes (*3*), no disease or infection has been previously reported. The studies reported here indicate that LAV/HTLV-III can be transmitted to chimpanzees both by inoculating virus isolates and human plasma. In some instances, immunologic abnormalities and prolonged lymphadenopathy have followed inoculation, but opportunistic infections or tumors characteristic of AIDS have not developed. Transmission of HTLV-III from lymphocyte-poor human plasma is consistent with reports of AIDS among recipients of plasma or anti-hemophilic concentrates made from pooled plasma (*4,5*).

The virus isolated from the LAV-inoculated chimpanzees was morphologically and immunologically identical to LAV. Virus particles were morphologically distinct from the Type D retrovirus etiologically implicated in "simian AIDS," a transmissible syndrome of macaques (*6,7*).

Long-term follow-up of the LAV and HTLV-III-infected chimpanzees, as well as other primates, is continuing. Careful examination of the interaction between infection and host response in primates could clarify the pathogenesis of AIDS in humans.

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1984 Aug 3;33:444

International Conference on Acquired Immunodeficiency Syndrome

An International Conference on Acquired Immunodeficiency Syndrome (AIDS) will be held April 15-17, 1985, at the World Congress Center, Atlanta, Georgia, sponsored by CDC; the National Institutes of Health; the Food and Drug Administration; the Alcohol, Drug Abuse, and Mental Health Administration; the Health Resources and Services Administration; and the World Health Organization. The purpose of the meeting is to review strategies for the prevention and control of AIDS and to exchange information on screening and diagnostic tests for AIDS and on the epidemiology, virology, immunology, clinical manifestations, and treatment of AIDS. Seating will be available for 1,800 participants. An announcement of keynote speakers and a call for abstracts will be published later. To obtain further information and future announcements, contact:

AIDS Conference
Building 1, Room 2047
Centers for Disease Control
Atlanta, Georgia 30333.

1984 Oct 26;33:589–92

Update: Acquired Immunodeficiency Syndrome (AIDS) in Persons with Hemophilia

Reports of hemophilia-associated acquired immunodeficiency syndrome (AIDS) in the United States were first published in July 1982 (*1*). Since then, the number of U.S. patients with underlying coagulation disorders who develop AIDS has increased each year. In 1981, one U.S. case was reported; in 1982, eight; in 1983, 14; and, as of October 15, 29 cases have been reported in 1984, for a total of 52 cases (Figure 1). Two of these 52 patients had hemophilia B; one, a factor V deficiency; and one, factor VIII deficiency due to her postpartum acquisition of a factor VIII inhibitor. The remaining 48 cases occurred among hemophilia A patients. Three patients are known to have had risk factors for AIDS other than hemophilia. These 52 persons resided in 22 states. Only 10 states have reported more than one case, and no state has reported more than eight cases.

With the exception of one 31-year-old factor V-deficient individual with Kaposi's sarcoma (and without risk factors for AIDS other than his hemophilia), each patient had at least one opportunistic infection suggestive of an underlying cellular immune deficiency. *Pneumocystis carinii* pneumonia has been the most common opportunistic infection, occurring in 44 (85%) of the 52 patients. Other opportunistic infections have included toxoplasmic encephalitis (two cases), disseminated *Mycobacterium avium intracellulare* (one), disseminated cytomegalovirus infection (two), disseminated candidiasis (one), and cryptococcal meningitis (one). Thirty hemophilia patients with AIDS have died; only three of the survivors were diagnosed more than 1 year ago.

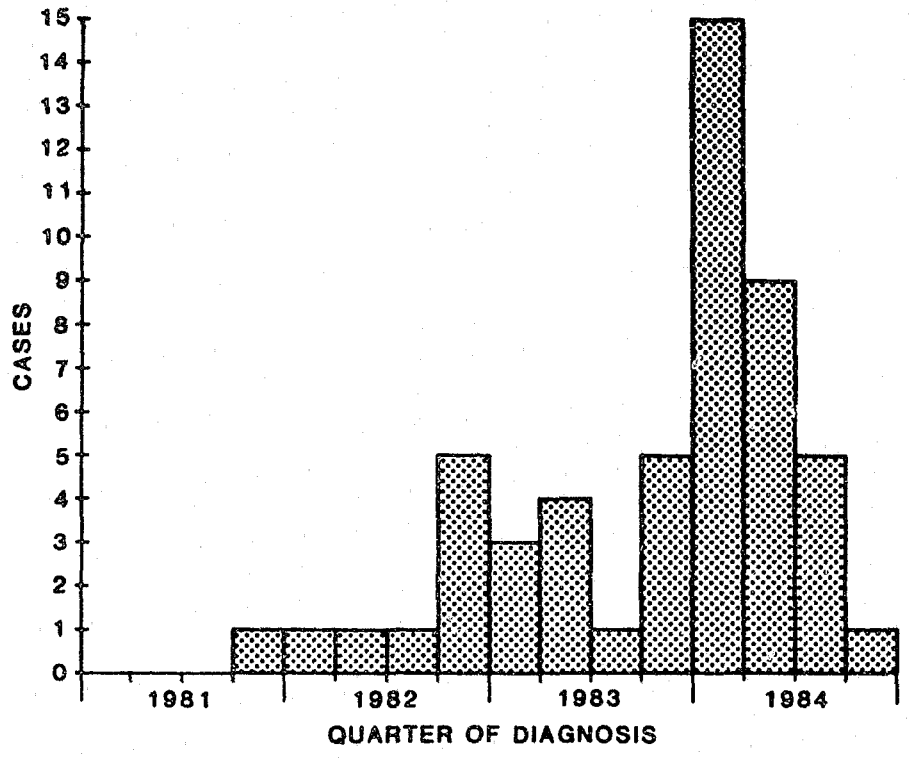
CDC has investigated the blood product usage of the majority of these cases. In nine cases, factor VIII concentrates have been the only blood product reportedly used in the 5 years before diagnosis of AIDS. These nine persons had no risk factors for AIDS other than hemophilia. The factor V-deficient patient with Kaposi's sarcoma had not used factor VIII concentrate products but had used large volumes of plasma and factor IX concentrates.

The sera of 22 (42%) of the 52 hemophilia-associated AIDS patients have been tested for antibody to antigens of the AIDS virus using Western blot analysis (*2*). Eighteen (82%) of these specimens contained antibody to one or more antigens (*2,3*). In cooperation with numerous hemophilia treatment centers and physicians, CDC has studied over 200 recipients of factor VIII and 36 recipients of factor IX concentrates containing materials from U.S. donors. Rates of AIDS virus antibody prevalence were 74% for factor VIII recipients and 39% for factor IX recipients (*3,4*). Only prospective evaluation will determine what risk of AIDS exists for seropositive individuals. A recently published study evaluated the thermostability of murine retroviruses inoculated into factor concentrates, using a cell transformation assay (*5*). After 48 hours at 68 C (154.4 F), viral titers dropped from 10^8 to two infectious particles/ml. In studies done at CDC, in cooperation with Cutter Laboratories, AIDS virus was added to factor VIII concentrate (virus titer 10^5) and the factor was lyophilized and heated to 68 C (154.4 F). The residual virus titer was determined by an infectivity assay (*6*). Virus was undetectable after 24 hours of heat treatment, the shortest time period examined.

Reported by P Levine, MD, Medical Director, National Hemophilia Foundation, New York City; Div of Host Factors, Center for Infectious Diseases, CDC.

Editorial Note: The possibility of blood or blood products being vehicles for AIDS transmission to hemophilia patients has been supported by the finding of risk of acquisition of AIDS for intravenous drug abusers (*7*) and, subsequently, by reports of transfusion-associated AIDS cases (*8*). The mainstays of therapy for the hemorrhagic phenomena of hemophilia are cryoprecipitate, fresh frozen plasma, and plasma factor preparations; these have been associated with the transmission of several known viral agents, including cytomegalovirus, hepatitis B virus, and the virus(es) of non-A, non-B hepatitis (*9*). While many U.S. hemophilia-associated AIDS patients have received blood products other than factor concentrates in the 5 years preceding their AIDS diagnosis, the occurrence of nine cases with no known risk factor or exposure other than the use of factor VIII preparations implicates these products as potential vehicles of AIDS transmission.

FIGURE 1. Hemophilia-associated acquired immunodeficiency syndrome (AIDS), by quarter — United States, 1981-October 15, 1984



The Medical and Scientific Advisory Council (MASAC) of the National Hemophilia Foundation (NHF) has recently issued revised recommendations for the therapy of hemophilia (*10*). To physicians treating patients with hemophilia, they recommend that (1) cryoprecipitate be used in factor VIII-deficient newborn infants and children under 4 years of age and in newly identified patients never treated with factor VIII concentrates; (2) fresh frozen plasma be used in factor IX-deficient patients in the same categories; and (3) desmopressin (DDAVP) be used whenever possible in patients with mild or moderate hemophilia A. The majority of hemophilia patients do not fit in categories (1) through (3). For these patients, MASAC recommends that, "because heat-treated products appear to have no increase in untoward effects attributable to the heat treatment, treaters using coagulation factor concentrates should strongly consider changing to heat-treated products with the understanding that protection against AIDS is yet to be proven." They also recommend that all elective surgical procedures for hemophilia patients be evaluated with respect to possible advantages and disadvantages of surgical delays

Although the total number of hemophilia patients who have thus far developed clinical manifestations of AIDS is small relative to other AIDS risk groups, incidence rates for this group are high (3.6 cases/1,000 hemophilia A patients and 0.6/1,000 hemophilia B patients). Continued surveillance is important. Physicians diagnosing opportunistic infections or unusual neoplasms in hemophilia patients who have not received antecedent immunosuppressive therapy are requested to report these findings to local or state health departments and to CDC.

In March 1983, the U.S. Public Health Service recommended that members of groups at increased risk of acquiring AIDS should refrain from donating plasma and or blood (*11*). A specific serologic test will soon become available for screening purposes, and thus a safer factor concentrate product should result. The preliminary evidence concerning the effects of heat-treatment on the viability of the AIDS virus is strongly supportive of the usefulness of heat-treatment in reducing the potential for transmission of the AIDS virus in factor concentrate products and suggest that the use of nonheat-treated factor concentrates should be limited. CDC and NHF will continue to study the effects of heat-treated factor on the immune status of patients with hemophilia.

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1984 Nov 2;33:607–9

Update: Acquired Immunodeficiency Syndrome — Europe

Ten countries provide the World Health Organization (WHO) Collaborating Centre on Acquired Immunodeficiency Syndrome (AIDS), Paris, France, with regular data, making follow-up and study of the AIDS situation possible in Europe (*1*); these countries are: Denmark, France, the Federal Republic of Germany, Greece, Italy, the Netherlands, Spain, Sweden, Switzerland, and the United Kingdom.

A total of 421 AIDS cases were diagnosed in these 10 countries (although onset of illness may have occurred elsewhere) up to July 15, 1984 (Table 1). In October 1983, the same countries reported 215 cases at the first meeting on AIDS, organized by the WHO Regional Office for Europe in Aarhus, Denmark (*2*). AIDS cases have increased nearly 100% in 8 months. Estimates of the rate of AIDS cases per million population vary considerably from one country to another. However, uneven geographic case distribution was found within the individual countries and also in other parts of the world.

Seven percent of the cases reported in these 10 countries occurred among women. Forty-nine percent of all patients were in the 30- to 39-year age group. Two cases occurring in children under 1 year of age were reported in France, the first in a Zairian child whose mother also had AIDS, and the second, in a Haitian child whose parents both had the disease.

Of the total patients recorded, 349 (83%) came from the 10 countries mentioned above (Table 2). Three other groups accounted for a considerable percentage: (1) the group of patients from countries in the Caribbean region, with 18 cases (4.3% of the total), including 17 Haitian patients (reported in France) and one patient from Dominica (reported in the United Kingdom). Except for three Haitians, these patients were living in Europe before the appearance of the first signs of the disease; (2) the group of patients from Africa included 39 cases (9.3% of the total). These patients came from Zaire (18), Congo (nine), Gabon (three), Mali (two), Zambia (two), Cameroon (one), Cape Verde (one), Ghana (one), Togo (one), and Uganda (one). The cases were diagnosed and reported in France (27 cases), Switzerland (six), the United Kingdom (two), the Federal Republic of Germany (two), Greece (one), and Italy (one). Thirty-two of these patients were living in Europe before the appearance of the initial symptoms; (3) the third group ("other nationalities") included 15 patients (3.6% of the total), consisting mainly of patients coming from the Americas: United States (seven), Argentina (one), Canada (one), Nicaragua (one), and Peru (one). The four other patients came from the following countries: Albania (one), Pakistan (one), Portugal (one), and Yugoslavia (one). Seven of them (four United States citizens, one Argentine, one Canadian, and one Pakistani) were not living in Europe when the first symptoms appeared.

Of the patients from the 10 European countries, 87.4% were male homosexuals, 3.4%, hemophilia patients, and 1.4%, drug abusers, while none of the known risk factors could be found for 6.9% of patients of both sexes. Among the latter, women comprised slightly more than 2% of the total. The 12 hemophilia patients were reported in the Federal Republic of Germany (five cases), Spain (three), France (two), and the United Kingdom (two). The five drug-abuse patients were reported in Spain (three cases) and the Federal Republic of Germany (two). The two patients for whom the only risk factor identified was blood transfusion were reported in France. The first had received transfusions in Haiti and Martinique at an interval of a few days; the second had received a transfusion in Paris. Both were given transfusions following traffic accidents.

In almost all patients from the Caribbean and Africa observed in Europe, none of the known AIDS risk factors were found. One Haitian patient (out of 17) and one African patient (out of 39) said they were homosexuals.

Women without known risk factors comprised 22% of the Caribbean cases and 33% of the African cases. Among patients of other nationalities, 13 were homosexuals; two were also drug abusers. The two patients (one Pakistani and one Portuguese) for whom no risk factor was found had lived in Equatorial Africa during the 5 years preceding diagnosis of the disease.

Reported in WHO Weekly Epidemiological Record *1984;59:305-7.*

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TABLE 1. Reported AIDS cases — 10 European countries as of July 15, 1984

Country	No. cases	Rates per million population*
Denmark	28	5.5
France	180	3.4
Federal Republic of Germany	79	1.3
Greece	2	0.2
Italy	8	0.1
Netherlands	21	1.5
Spain	14	0.4
Sweden	7	0.8
Switzerland	28	4.4
United Kingdom	54	1.0
Total	**421**	**1.4**

*Source of population figures: *World Health Statistics Annual*, Geneva, WHO, 1981.

TABLE 2. Distribution of AIDS cases, by identified risk group and origin of patients — Denmark, France, Federal Republic of Germany, Greece, Italy, Netherlands, Spain, Sweden, Switzerland, United Kindgom, as of July 15, 1984

Risk group	Europe (10 countries)	Caribbean	Africa	Other	Total
1. Male homosexuals	305	1	1	11	318
2. Drug abusers	5	—	—	—	5
3. Hemophilia patients	12	—	—	—	12
4. Transfusion recipients (without other risk factors)	2	—	—	—	2
Groups 1 & 2	1	—	—	2	3
No known risk factors					
Males	16	13	25	2	56
Females	8	4	13	—	25
Total	**349**	**18**	**39**	**15**	**421**

1984 Nov 2;33:620

Pentamidine Isethionate Commercially Available

On October 16, 1984, pentamidine isethionate was approved by the U.S. Food and Drug Administration for the treatment of *Pneumocystis carinii* pneumonia. Hospital pharmacies can purchase pentamidine isethionate either through pharmaceutical wholesalers or directly from LyphoMed, Inc. Since pentamidine isethionate is now commercially available, CDC will no longer continue to supply this drug.

All product requests should be directed to:

LyphoMed, Inc.
2020 Ruby Street
Melrose Park, Illinois 60160

In an emergency, pentamidine isethionate can be obtained by calling (312) 345-9746.

1984 Nov 23;33:659—60

Abstract Deadline for International Conference on Acquired Immunodeficiency Syndrome (AIDS)

December 10, 1984, is the deadline for receipt of abstracts to be considered for presentation at the International Conference on Acquired Immunodeficiency Syndrome (AIDS), which will be held in Atlanta, Georgia, at the Georgia World Congress Center on April 14-17, 1985. This conference will be sponsored by CDC, the Alcohol, Drug Abuse, and Mental Health Administration, the Food and Drug Administration, the Health Resources and Services Administration, the National Institutes of Health, and the World Health Organization in cooperation with Emory University School of Medicine and Morehouse School of Medicine. Inquiries related to the conference and the submission of abstracts should be directed to:

AIDS Conference Office
Centers for Disease Control
Building 1, Room 2047
Atlanta, Georgia 30333
(404) 321-2290 or FTS 236-2290

1984 Nov 30;33:661–64

Update: Acquired Immunodeficiency Syndrome (AIDS) — United States

As of November 26, 1984, physicians and health departments in the United States had reported 6,993 patients meeting the surveillance definition for acquired immunodeficiency syndrome (*1,2*). Over 86% of the adult AIDS patients and 82% of the pediatric patients have been reported since January 1983 (Figure 1). Three thousand three hundred forty-two (48%) of all reported patients are known to have died (48% of the adults and 69% of the children), including 73% of patients diagnosed before January 1983.

Adult Patients: Among 6,921 adult AIDS patients, 59% of cases have occurred among whites; 25%, among blacks; 14%, among persons of Hispanic origin; and 2%, among persons of other or unknown race/ethnicity. Seventy-five percent of the adults were reported to be residents of New York, California, Florida, or New Jersey, with the remainder reported from 41 other states, the District of Columbia, and Puerto Rico. Identified risk groups of adult AIDS patients and trends for each group are shown in Table 1. Among the 54 AIDS patients who were heterosexual sex partners of persons with AIDS or with an increased risk for acquiring AIDS, 49 (91%) were women.

Of the adult AIDS patients, 263 (4%) have not been placed in any of the identified risk groups and are classified as noncharacteristic patients. One hundred eighty-six (71%) of the noncharacteristic patients were male; 34%, white; 43%, black; and 19%, of Hispanic origin. Investigations of 65 of the male noncharacteristic patients have identified 17 (26%) who reported a history of sexual contact with female prostitutes. Five of the 17 gave a history of over 100 heterosexual partners in the past 5 years. Seven were Hispanic; five, black; four, white; and one, Asian. Thirteen had *Pneumocystis carinii* pneumonia (PCP); three had Kaposi's sarcoma (KS); and one had another opportunistic disease. One of the nine noncharacteristic women interviewed claimed to be a former prostitute.

Pediatric Patients: Of 72 patients under 13 years of age, 81% were reported to be residents of New York, California, Florida, or New Jersey, with the remainder reported from nine other states. Forty-two (58%) of the 72 patients were male. Fifty (69%) had PCP without KS; four (6%) had KS without PCP; two (3%) had both PCP and KS; and 16 (22%) had another opportunistic disease without either PCP or KS. Twenty-five percent of the pediatric patients are white; 54%, black; and 19%, of Hispanic origin. Twenty-nine (40%) of the 72 pediatric patients

FIGURE 1. AIDS cases, by half year of report — United States, 1981 through first half, 1984

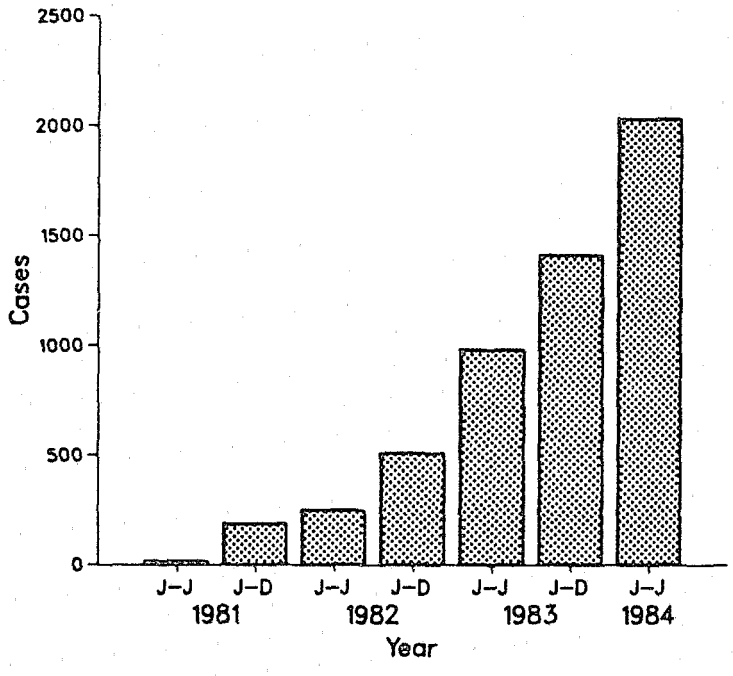

TABLE 1. Adult AIDS patients, by patient group and date of report — United States, through November 1984

Patient group	Date of report: Before Dec. 1982 No. cases	(%)	Dec. 1982-Nov. 1983 No. cases	(%)	Dec. 1983-Nov. 1984 No. cases	(%)	Total	(%)
Homosexual/bisexual	636	(74.5)	1,600	(71.5)	2,802	(73.2)	**5,038**	**(72.8)**
IV drug user	121	(14.2)	401	(17.9)	668	(17.4)	**1,190**	**(17.2)**
Haitian	48	(5.6)	90	(4.0)	111	(2.9)	**249**	**(3.6)**
Hemophilia patient	7	(0.8)	11	(0.5)	28	(0.7)	**46**	**(0.6)**
Heterosexual contacts	8	(0.9)	19	(0.9)	27	(0.7)	**54**	**(0.8)**
Transfusion recipients	2	(0.2)	29	(1.3)	50	(1.3)	**81**	**(1.2)**
Noncharacteristic	32	(3.8)	87	(3.9)	144	(3.8)	**263**	**(3.8)**
Total	**854**	**(100)**	**2,237**	**(100)**	**3,830**	**(100)**	**6,921**	**(100)**

came from families in which one or both parents had histories of intravenous (IV) drug abuse; 17 had one or both parents who were born in Haiti; 12 had received blood or blood components before their onsets of illness; four had hemophilia; one had a father who was bisexual; and one child's parents deny any risk factors. Risk-factor information on the parents of the eight remaining patients is incomplete.

Eighty-one adults (1% of adult patients) and 12 children (17% of pediatric patients) with transfusion-associated AIDS (TA-AIDS) have no other risk factors and were transfused with blood or blood components within 5 years of illness onset. TA-AIDS patients received blood from one to 75 donors (median 16 donors); interval from tranfusion to diagnosis was 4 months to 62 months (median 29 months for adults, 14 months for children). Median age at diagnosis of AIDS was 53 years for adults (range 19-81 years) and 14 months for children (range 4-46 months). Most adults received transfusions associated with surgery, while most infants with TA-AIDS were transfused for medical problems associated with prematurity (*3*).

Reported by State and Territorial Epidemiologists; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Throughout 1984, the number of AIDS cases reported increased 74% compared to the same period of 1983. Forty-two states, the District of Columbia, and Puerto Rico now require reporting of AIDS cases to health departments. Although 45 states have reported cases, the majority of adult AIDS patients continues to be reported from a small number of states. The geographic distribution of AIDS among children with parents in high-risk groups is similar to that seen for heterosexual adult AIDS patients; over 89% are from New York, California, New Jersey, and Florida. In both children and heterosexual adults, AIDS is much more likely to present with PCP and other opportunistic infections than with KS. Although the number of AIDS cases being reported continues to increase in all patient groups, the rate of increase among Haitian AIDS patients is significantly less ($p < 0.001$) than among the remaining groups.

The proportion of adult patients outside identified risk groups for AIDS has remained stable. AIDS patients classified as noncharacteristic are a heterogenous group. For example, some patients, such as 11 with KS and normal immunologic studies, may not have AIDS, even though they meet the surveillance definition. For other patients, information concerning risk factors is incomplete. Still other noncharacteristic patients may have unknowingly been the sexual partners of risk-group members (*4*).

Heterosexual transmission of AIDS has been reported in both the United States and Africa (*5-9*). In the United States, such transmission has been uncommon. When heterosexual transmission has occurred, it has primarily been from men, particularly male IV drug users, to their female partners. However, in several African countries, heterosexual transmission appears to be the predominant mode in the spread of AIDS. In Zaire, where the male-to-female ratio of AIDS cases has been reported to be 1.1 to 1, transmission from women to men may be more common than in the United States (*8*). Furthermore, among 24 adults diagnosed as having AIDS in Rwanda, 12 of the 17 men were reported to have had contact with prostitutes, and three of the seven women were prostitutes (*9*).

The importance of female-to-male transmission in the spread of AIDS in the United States and the role, if any, of female prostitutes in this transmission have not been established. Women, including female prostitutes, could be exposed to the AIDS virus through sexual contact, use of IV drugs, or transfusion. However, the number of these women presently infected

is likely to be small. It is not known if such women would be as efficient as heterosexual or homosexual men in transmitting the AIDS virus. Future studies will attempt to clarify and quantify the risks of female-to-male transmission and contact with prostitutes.

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1984 Dec 14;33:685–687

Hepatitis B Vaccine: Evidence Confirming Lack of AIDS Transmission

Recent studies have provided important additional assurances concerning the safety of hepatitis B (HB) vaccine. The vaccine currently licensed in the United States is produced from pooled plasma of hepatitis B surface antigen-positive individuals, some of whom are also in high-risk groups for acquired immunodeficiency syndrome (AIDS). Concern has been expressed that the etiologic agent of AIDS might be present in the vaccine and survive the inactivation steps used in the manufacturing procedure. The concerns persisted, despite the fact that these steps were reportedly able to inactivate representative members of all known virus groups. The recent identification of a retrovirus as the etiologic agent of AIDS has allowed workers to (1) directly test the inactivation of the AIDS virus by the inactivation steps used in the vaccine manufacturing procedure; (2) look for the AIDS virus' nucleic acid sequences in the vaccine; and (3) look for serologic markers of infection from the AIDS virus in vaccine recipients. Concurrently, monitoring of AIDS patients and high-risk groups has continued in order to look for any epidemiologic evidence of an association between HB vaccine and AIDS.

The effect of the HB vaccine inactivation process on the AIDS virus and two other human retroviruses (HTLV-I and HTLV-II) was studied. Three separate inactivation steps are used in the manufacture of the U.S.-licensed HB vaccine: (1) 1 μg/ml pepsin, pH 2, 37 C (98.6 F), 18 hours; (2) 8 molar urea, 37 C (98.6 F), 4 hours; and (3) 0.01% formaldehyde, 37 C (98.6 F), 72 hours. In separate studies conducted between CDC and the vaccine manufacturer Merck, Sharp & Dohme (MSD), and between State University of New York (SUNY) Upstate Medical Center and MSD, cell culture supernatant fluid containing the AIDS virus and cultured cells containing HTLV-I, HTLV-II, and the AIDS virus were transported to MSD and individually exposed to the three inactivation steps. The materials were then returned to CDC and SUNY for detection of residual viral infectivity. Virus infectivity was assayed by adding the treated material to cultured lymphocytes and periodically monitoring these for signs of viral replication (reverse transcriptase activity and virus antigen expression) (*1*) and in the case of HTLV-I and HTLV-II, transformation (*2,3*). No residual virus was detected in material treated with formalin or urea, while material treated with pepsin at pH 2 did have residual virus present. Heat, an inactivation step used in vaccines manufactured outside the United States, has also been shown to inactivate the AIDS virus (*4*).

The second approach, which attempted to detect AIDS virus-related nucleic acid sequences using dot blot hybridization analysis of the vaccine with an AIDS virus deoxyribonucleic acid (DNA) probe, was done at MSD using as a positive control infected cellular (ribonucleic acid) RNA preparations provided by CDC. The vaccine contained no detectable AIDS virus-related sequences at a sensitivity of less than one picogram of DNA per 20-μg dose of vaccine.

The third approach attempted to detect seroconversion to AIDS virus antibodies in paired sera of HB vaccine recipients. Paired sera were examined at CDC using a highly sensitive and specific ELISA assay for the AIDS virus. No seroconversions were detected in 19 individuals

who had received vaccine manufactured from plasma pools that contained plasma of homosexual men. Previous workers have reported that sera of HB vaccine recipients did not show helper-T/supressor-T ratio inversion, a finding common in AIDS patients (*5*).

Epidemiologic approaches to detect an association between HB vaccine and AIDS have included analysis of data on AIDS cases reported to CDC concerning their receipt of HB vaccine and monitoring rates of AIDS in groups of homosexually active men who did or did not receive HB vaccine in the vaccine trials conducted by CDC in Denver, Colorado, and San Francisco, California. To date, 68 AIDS cases have been reported among approximately 700,000 U.S. HB vaccine recipients; 65 have occurred among persons with known AIDS risk factors, while risk factors for the remaining three are under investigation. In addition, the rate of AIDS for HB vaccine recipients in CDC vaccine trials among homosexually active men in Denver and San Francisco does not differ from that for men screened for possible participation in the trials but who received no HB vaccine because they were found immune to HB.

Reported by B Poiesz, MD, R Tomar, MD, B Lehr, J Moore, PhD, State University of New York Upstate Medical Center, Syracuse Veterans Administration Medical Center, Syracuse, New York; Merck, Sharp & Dohme Research Laboratories, West Point, Pennsylvania; AIDS Br, Hepatitis Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The Immunization Practices Advisory Committee (ACIP) (*6*) has recommended preexposure HB vaccination for susceptible members of the following groups in the United States: health-care workers (medical, dental, laboratory, and support groups) judged to have significant exposure to blood or blood products; clients and selected staff of institutions for the mentally retarded; hemodialysis patients; homosexually active males; users of illicit, injectable drugs; recipients of certain blood products (patients with clotting factor disorders); and household and sexual contacts of HB virus (HBV) carriers. In addition, vaccine may be warranted for classroom contacts of deinstitutionalized mentally retarded HBV carriers; special high-risk populations (Alaskan Eskimos and immigrants and refugees from areas with highly endemic disease); inmates of long-term correctional facilities; and some U.S. citizens living or traveling abroad (*7*). The ACIP has also recommended screening all pregnant women belonging to high-risk groups for HB and treating their newborn infants with hepatitis B immune globulin and HB vaccine (*8*).

HB vaccine acceptance in the United States has been seriously hindered by the fear of possible AIDS transmission from the vaccine. The recent identification of AIDS' etiologic agent has made possible direct laboratory measurement of virus inactivation, nucleic acid presence, and serologic evidence of infection. These studies were unable to detect the AIDS virus' viral protein or nucleic acid in the purified vaccine product and clearly indicate that if virus were present, it would be killed by the manufacturing procedures. In addition, epidemiologic monitoring of AIDS cases and high-risk groups confirms the lack of AIDS transmission by HB vaccine. This information should remove a major impediment to vaccine use.

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1985 Jan 11;34:1–5

Provisional Public Health Service Inter-Agency Recommendations for Screening Donated Blood and Plasma for Antibody to the Virus Causing Acquired Immunodeficiency Syndrome

In March 1983, the U.S. Public Health Service issued inter-agency recommendations on the prevention of acquired immunodeficiency syndrome (AIDS) (*1*). Included was the recommendation that members of groups at increased risk for AIDS should refrain from donating plasma and/or blood. That recommendation was made to decrease the risk of AIDS associated with the administration of blood or blood products, which accounts for about 2% of all reported AIDS cases in the United States.

Evidence has shown that a newly recognized retrovirus is the cause of AIDS. Although this virus has been given several names, including human T-lymphotropic virus type III (HTLV-III) (*2*), lymphadenopathy-associated virus (LAV) (*3*), and AIDS-associated retrovirus (ARV) (*4*), it is referred to as HTLV-III in this discussion. Tests to detect antibody to HTLV-III will be licensed and commercially available in the United States in the near future to screen blood and plasma for laboratory evidence of infection with the virus. The antibody tests are modifications of the enzyme-linked immunosorbent assay (ELISA), which uses antigens derived from whole disrupted HTLV-III (*5*).

There is considerable experience with the ELISA test in research laboratories, but much additional information will be gathered following its widespread application. In the early phases of testing, a number of false-positive tests may be encountered. Adjustments in interpretation are anticipated as more is learned about the performance of the test in an individual laboratory and about the specific proportion of falsely positive or falsely negative tests in the screening setting where the test is used.

The present recommendations concern the use of these tests to screen blood and plasma collected for transfusion or manufactured into other products. They are intended to supplement, rather than replace, the U.S. Food and Drug Administration's recently revised recommendations to blood and plasma collection facilities and the earlier inter-agency recommendations (*1*). Additional public health applications of these tests in the understanding and control of AIDS will be described in a subsequent report.

BACKGROUND

Antibody Detection Studies

The ELISA test has been used in many research programs for detecting antibodies to HTLV-III in patients with AIDS and with AIDS-related conditions. In different studies, HTLV-III antibody was found to range from 68% to 100% of patients with AIDS, and in 84%-100% of persons with related conditions, such as unexplained generalized lymphadenopathy (*5-7*). Serologic surveys have yielded variable seropositivity rates in groups at increased risk for AIDS: 22%-65% of homosexual men (*8-11*), 87% of intravenous-drug abusers admitted to a detoxification program in New York City (*12*), 56%-72% of persons with hemophilia A (*13,14*), and 35% of women who were sexual partners of men with AIDS (*15*). In contrast to the above groups, HTLV-III antibody has been detected in fewer than 1% of persons with no known risks for AIDS (*4-10*).

The time needed to develop a positive antibody test following infection is not known. Data regarding the interval between infection with HTLV-III and seroconversion are limited. A nurse who sustained a needle-stick injury while caring for an AIDS patient developed antibody between 4 and 7 weeks following exposure (*16*). Additionally, a recent study described several asymptomatic individuals infected with HTLV-III for more than 6 months in the absence of detectable antibody (*17,18*). Nonetheless, currently available ELISA tests can be expected to identify most persons with HTLV-III infection.

Virus Isolation Studies

HTLV-III has been isolated from blood, semen, and saliva and has been recovered from many individuals in the presence of antibody (*19,20*). HTLV-III has been isolated from the blood of 85% or more of seropositive individuals with AIDS (*21*), lymphadenopathy, or other AIDS-associated conditions (*2*) and from three of four mothers of infants with AIDS (*2*). The virus has also been isolated from asymptomatic seropositive homosexual men and hemophiliacs, and has been recovered from 95% of seropositive high-risk blood donors who had been implicated in the transmission of AIDS through transfusion (*21*). The recovery of HTLV-III from these high-risk donors 2 or more years after their initial donation provides evidence that viremia may persist for years in both asymptomatic and symptomatic individuals. HTLV-III has also been isolated from some asymptomatic seronegative persons, but this is the exception (*17*).

Modes of Transmission

Epidemiologic data suggest that the virus has been transmitted through intimate sexual contact; sharing contaminated needles; transfusion of whole blood, blood cellular components, plasma, or clotting factor concentrates that have not been heat treated; or from infected mother to child before, at, or shortly after the time of birth. No other products prepared from blood (e.g., immunoglobulin, albumin, plasma protein fraction, hepatitis B vaccine) have been implicated, nor have cases been documented to occur through such common exposures as sharing meals, sneezing or coughing, or other casual contact.

Natural History of Infection

Information about the course of infection with HTLV-III is incomplete, but the majority of infected adults will not acquire clinically apparent AIDS in the first few years after infection. In some studies 5%-19% of seropositive homosexual men developed AIDS within 2-5 years after a previously collected serum sample was retrospectively tested and found to be seropositive. An additional 25% developed generalized lymphadenopathy, oral candidiasis, or other AIDS-associated conditions within the same interval (*11,22*). The long-term prognosis for most persons infected with HTLV-III is unknown.

SCREENING BLOOD AND PLASMA

Initial Testing

Persons accepted as donors should be informed that their blood or plasma will be tested for HTLV-III antibody. Persons not wishing to have their blood or plasma tested must refrain from donation. Donors should be told that they will be notified if their test is positive and that they may be placed on the collection facility's donor deferral list, as is currently practiced with other infectious diseases, and should be informed of the identities of additional deferral lists to which the positive donors may be added.

All blood or plasma should be tested for HTLV-III antibody by ELISA. Any blood or plasma that is positive on initial testing must not be transfused or manufactured into other products capable of transmitting infectious agents.

When the ELISA is used to screen populations in whom the prevalence of HTLV-III infections is low, the proportion of positive results that are falsely positive will be high. Therefore, the ELISA should be repeated on all seropositive specimens before the donor is notified. If the repeat ELISA test is negative, the specimen should be tested by another test.

Other Testing

Other tests have included immunofluorescence and radioimmunoprecipitation assays, but the most extensive experience has been with the Western blot technique (*22*), in which antibodies can be detected to HTLV-III proteins of specific molecular weights. Based on available data, the Western blot should be considered positive for antibody to HTLV-III if band p24 or gp41 is present (alone or in combination with other bands).

Notification of Donors

If the repeat ELISA test is positive or if other tests are positive, it is the responsibility of the collection facility to ensure that the donor is notified. The information should be given to the donor by an individual especially aware of the sensitivities involved. At present, the proportion of these seropositive donors who have been infected with HTLV-III is not known. It is, therefore, important to emphasize to the donor that the positive result is a preliminary finding that may not represent true infection. To determine the significance of a positive test, the donor should be referred to a physician for evaluation. The information should be given to the donor in a manner to ensure confidentiality of the results and of the donor's identify.

Maintaining Confidentiality

Physicians, laboratory and nursing personnel, and others should recognize the importance of maintaining confidentiality of positive test results. Disclosure of this information for purposes other than medical or public health could lead to serious consequences for the individual. Screening procedures should be designed with safeguards to protect against unauthorized disclosure. Donors should be given a clear explanation of how information about them will be handled. Facilities should consider developing contingency plans in the event that disclosure is sought through legal process. If donor deferral lists are kept, it is necessary to maintain confidentiality of such lists. Whenever appropriate, as an additional safeguard, donor deferral lists should be general, without indication of the reason for inclusion.

Medical Evaluation

The evaluation might include ELISA testing of a follow-up serum specimen and Western blot testing, if the specimen is positive. Persons who continue to show serologic evidence of HTLV-III infection should be questioned about possible exposure to the virus or possible risk factors for AIDS in the individual or his/her sexual contacts and examined for signs of AIDS or

related conditions, such as lymphadenopathy, oral candidiasis, Kaposi's sarcoma, and unexplained weight loss. Additional laboratory studies might include tests for other sexually transmitted diseases, tests of immune function, and where available, tests for the presence of the virus, such as viral culture. Testing for antibodies to HTLV-III in the individual's sexual contacts may also be useful in establishing whether the test results truly represent infection.

RECOMMENDATIONS FOR THE INDIVIDUAL

An individual judged most likely to have an HTLV-III infection should be provided the following information and advice:

1. The prognosis for an individual infected with HTLV-III over the long term is not known. However, data available from studies conducted among homosexual men indicate that most persons will remain infected.
2. Although asymptomatic, these individuals may transmit HTLV-III to others. Regular medical evaluation and follow-up is advised, especially for individuals who develop signs or symptoms suggestive of AIDS.
3. Refrain from donating blood, plasma, body organs, other tissue, or sperm.
4. There is a risk of infecting others by sexual intercourse, sharing of needles, and possibly, exposure of others to saliva through oral-genital contact or intimate kissing. The efficacy of condoms in preventing infection with HTLV-III is unproven, but the consistent use of them may reduce transmission.
5. Toothbrushes, razors, or other implements that could become contaminated with blood should not be shared.
6. Women with a seropositive test, or women whose sexual partner is seropositive, are themselves at increased risk of acquiring AIDS. If they become pregnant, their offspring are also at increased risk of acquiring AIDS.
7. After accidents resulting in bleeding, contaminated surfaces should be cleaned with household bleach freshly diluted 1:10 in water.
8. Devices that have punctured the skin, such as hypodermic and acupuncture needles, should be steam sterilized by autoclave before reuse or safely discarded. Whenever possible, disposable needles and equipment should be used.
9. When seeking medical or dental care for intercurrent illness, these persons should inform those responsible for their care of their positive antibody status so that appropriate evaluation can be undertaken and precautions taken to prevent transmission to others.
10. Testing for HTLV-III antibody should be offered to persons who may have been infected as a result of their contact with seropositive individuals (e.g., sexual partners, persons with whom needles have been shared, infants born to seropositive mothers).

Revised recommendations will be published as additional information becomes available and additional experience is gained with this test.

Reported by Centers for Disease Control; Food and Drug Administration; Alcohol, Drug Abuse, and Mental Health Administration; National Institutes of Health; Health Resources and Services Administration.

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1985 Jan 18;34:21–31

Update: Acquired Immunodeficiency Syndrome — Europe

As of October 15, 1984, 559 cases of acquired immunodeficiency syndrome (AIDS) had been reported to the World Health Organization (WHO) Collaborating Centre on AIDS. One hundred thirty new cases were noted in the 10 countries corresponding with the Centre at the time of the previous report (July 15, 1984), an average increase of 10 cases per week (Table 1).

TABLE 1. Reported acquired immunodeficiency syndrome cases and estimated rates per million population — 15 European countries*

Country	Oct. 1983†	July 1984	Oct. 1984	Rates§
Czechoslovakia	0	0	0	0.0
Denmark	13	28	31	6.0
Finland	¶	¶	4	0.8
France	94	180	221	4.0
Federal Republic of Germany	42	79	110	1.8
Greece	¶	2	2**	0.2
Iceland	0	0	0	0.0
Italy	3	8	10	0.2
Netherlands	12	21	26	1.8
Norway	¶	¶	4	1.0
Poland	0	0	0	0.0
Spain	6	14	18	0.5
Sweden	4	7	12	1.5
Switzerland	17	28	33	5.0
United Kingdom	24	54	88	1.6
Total	216	421	559	1.5

*Czechoslovakia, Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, United Kingdom.
†These data were reported at the first European meeting on AIDS held in Aarhus, Denmark, October 1983.
§Based on 1983 populations, INED, Paris.
¶No data reported at this time.
**Data of July 15, 1984.

The greatest increases were observed in France, with 41 new cases (three to four per week); United Kingdom—34 new cases (two to three per week); and Federal Republic of Germany—31 new cases (two to three per week). In the other seven countries, the increase was less—two to five cases between July and October. Among the five new participating countries, three (Czechoslovakia, Iceland, and Poland) said no AIDS cases had ever been reported, and two (Finland and Norway) reported four cases each.

AIDS cases per million population were calculated from 1983 population data provided by the Institut National d'Etudes Démographiques (INED), Paris, France. The highest rate was observed in Denmark—six cases per million population; Switzerland—five per million; and France—four per million. These rates are low compared to that in the United States: 27.6 per million population as of October 1, 1984.

Of the total 559 cases, 255 (46%) deaths were reported (Table 2). The primary diseases were opportunistic infections alone for 62% (348/559) of the patients; Kaposi's sarcoma (KS) for 23% (127/559); and opportunistic infection with KS for 14% (79/559). Category "other" includes three cases of progressive multifocal leukoencephalitis (France—two; Denmark—one) and two cases of cerebral lymphoma alone (United Kingdom—one; Federal Republic of Germany—one).

The highest case-fatality rates (70%) were noted for patients with KS and opportunistic infection; the case-fatality rate for opportunistic infection alone was 49%, and for KS alone, 22%.

Ninety-four percent (525/559) of the cases were among men. The male-to-female ratio was 15.4, compared with 14.5 for the United States. Forty-nine percent of the cases occurred in the 30- to 39-year age group (Table 3).

Four groups of differing geographic origin of birth were noted (Table 4).

European: 479 cases (86% of total). Four hundred sixty-five patients lived in Europe (including European countries not yet collaborating with the Centre) before the onset of the first symptoms. Fourteen patients (3% of cases occurring among Europeans) lived outside Europe (United States—three; Zaire—two; Haiti—two; Gabon—one; Nicaragua—one; Venezuela—one; South Africa—one; Ghana—one; Congo—one; unknown—one).

Caribbean: 21 cases (4%). Nineteen patients lived in Europe (17 Haitians living in France; one Dominican and one Jamaican living in the United Kingdom). Two Haitian patients diagnosed in France lived in Haiti.

African: 45 cases (8%). These patients originated from: Zaire—19 patients; Congo—10; Gabon—three; Mali—two; Cameroon—two; Zambia—two; Madagascar—one; Cape Verde—one; Chad—one; Algeria—one; Ghana—one; Togo—one; Uganda—one. These cases were diagnosed in six reporting countries: France—33 patients; Switzerland—six; United

TABLE 2. Acquired immunodeficiency syndrome cases and number of deaths, by disease category — 15 European countries, through October 15, 1984

Disease category	Cases (%)	Deaths (%)
Opportunistic infection	348 (62)	169 (49)
Kaposi's sarcoma	127 (23)	28 (22)
Opportunistic infection and Kaposi's sarcoma	79 (14)	55 (70)
Others	5 (1)	3 (60)
Unknown	0 (0)	0 (0)
Total	**559 (100)**	**255 (46)**

TABLE 3. Acquired immunodeficiency syndrome cases, by age group and sex — 15 European countries, through October 15, 1984

Age group	Males	Females	Total No. (%)
0-11 months	2	0	2 (< 1)
1-4 years	0	0	0 (0)
5-19 years	5	0	5 (1)
20-29 years	86	15	101 (18)
30-39 years	263	12	275 (49)
40-49 years	130	6	136 (24)
50-59 years	28	1	29 (5)
≥ 60 years	5	0	5 (1)
Unknown	6	0	6 (1)
Total*	**525**	**34**	**559 (100)**

*Sex ratio = 15.4

Kingdom—two; Federal Republic of Germany—two; Greece—one; Italy—one. Seventy-three percent (33/45) of these patients resided in Europe before the onset of the first symptoms. Eleven resided in Africa, and one, in the United States.

Other origins: 14 cases (3%). Most of these originated from the American continents: United States—nine; Canada—one; Argentina—one; Nicaragua—one; Peru—one. One was from Pakistan. Of these, nine were not living in Europe before the onset of symptoms (United States—six; Argentina—one; Canada—one; Pakistan—one).

Among the Europeans, 87% (415/479) were male homosexuals or bisexuals (Table 4). Two percent (7/479) were intravenous (IV) drug abusers, and 1% (3/479) were both IV drug abusers and homosexual. These cases were diagnosed in the Federal Republic of Germany—six; Spain—three; France—one. Four percent (17/479) were hemophilia patients diagnosed in: Federal Republic of Germany—eight; Spain—four; United Kingdom—three; France—two. For 1% (3/479) of patients, all diagnosed in France, the only risk factor noted was blood transfusion. One was transfused in Haiti, and a few days later, in Martinique (French West Indies); one was transfused in Paris; and the third was a resident of Italy, who was transfused in France. For 7% (33/479), no known risk factors were noted.

Among the Caribbeans, two of 21 patients were homosexual. Nineteen did not present any known risk factors. Among the Africans, four (9%) of 45 were homosexual; 41 did not present any known risk factors. Among the 14 patients of other origins, 11 were homosexual, and two were both homosexual and IV drug abusers diagnosed in the United Kingdom and Spain. One did not present any known risk factors.

Figure 4 indicates the progression of cases and deaths by half year of diagnosis (diagnosis being the date of positive biopsy or culture confirming the disease fitting the CDC case definition) since 1981. (Before 1981, 17 cases, including nine deaths, were reported.) Fifty-two percent of the patients diagnosed 1 year ago and 72% of the patients diagnosed 2 years ago have died. Although there is no information on this point, it appears that more cases diagnosed before 1981 have been lost to follow-up.

Editorial Note: The WHO Regional Bureau for Europe consists of 32 European countries. By July 15, 1984, 10 of these countries participated in the AIDS surveillance by reporting to the

TABLE 4. Acquired immunodeficiency syndrome cases, by patient risk group and geographic origin — 15 European countries, through October 15, 1984

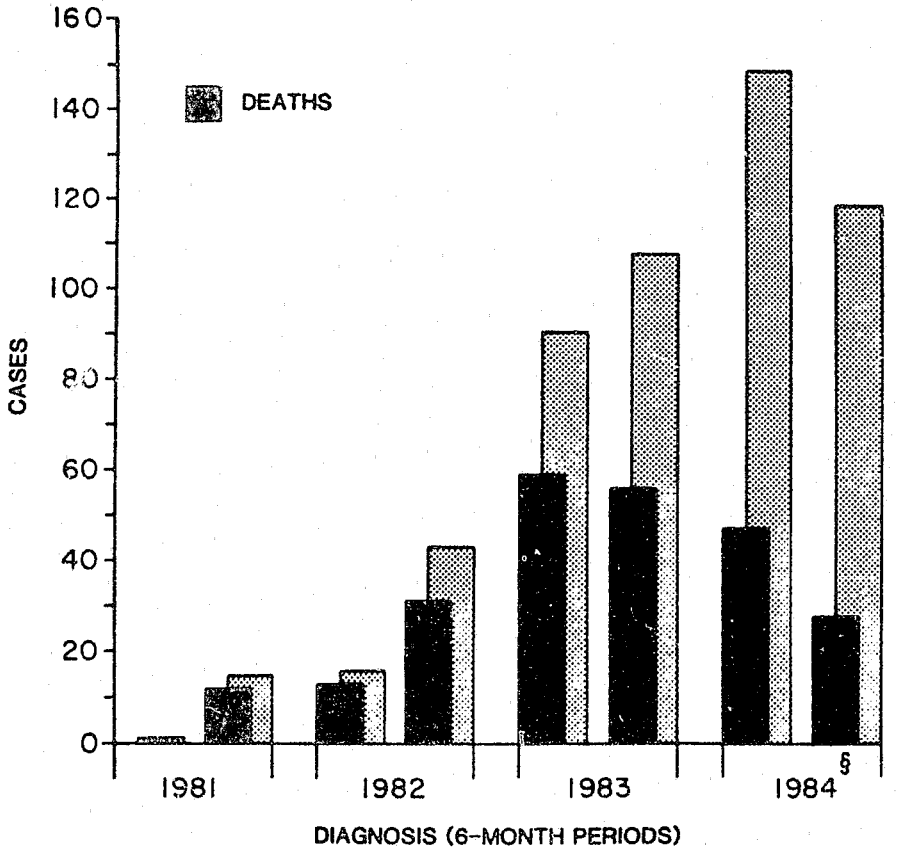
Patient risk groups	Nationality				Total
	European	Caribbean	African	Others	
1. Male homosexuals or bisexuals	415	2	4	11	432
2. IV drug abusers	7	0	0	0	7
3. Hemophilia patients	17	0	0	0	17
4. Transfusion recipients (without other risk factors)	3	0	0	0	3
5. 1 and 2 associated	3	0	0	2	5
6. No known risk factor					
males	21	15	26	1	63
females	12	4	15	0	31
7. Unknown	1	0	0	0	1
Total	**479**	**21**	**45**	**14**	**559**

Centre. By October 15, 1984, an additional five countries had been accepted to collaborate: Czechoslovakia, Finland, Iceland, Norway, and Poland. AIDS is presently a notifiable disease in four of the 15 reporting countries: Denmark, Iceland, Norway, and Sweden.

One of the main features of the European situation is the number of cases occurring among persons originating from equatorial Africa. Because Belgium has not yet reported, the picture of the situation is incomplete. (The participation of this country is expected for the next report.)

Zaire has drawn special attention in recent publications. The occurrence among the African patients diagnosed in Europe of a number of cases originating from other African countries, and also of cases among Europeans having stayed in these countries, shows that Zaire may not

FIGURE 4. Acquired immunodeficiency syndrome cases and number of deaths, by 6-month period of diagnosis — 13 European countries,* January 1, 1981-October 15, 1984†



*Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom.

†Before 1981, 17 cases, including nine deaths, were reported.

§July-October 15, 1984.

be the only African focus of this disease. The lack of reported cases probably reflects lack of surveillance in other countries of this area.

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Update: Prospective Evaluation of Health-Care Workers Exposed via the Parenteral or Mucous-Membrane Route to Blood or Body Fluids from Patients with Acquired Immunodeficiency Syndrome — United States

On August 15, 1983, CDC initiated prospective surveillance of health-care workers (HCWs) with documented parenteral or mucous-membrane exposure to potentially infectious body fluids from patients with definite or suspected acquired immunodeficiency syndrome (AIDS). As of December 31, 1984, 361 HCWs with such exposures were enrolled in CDC's surveillance registry under the auspices of participating hospitals, other health-care institutions, and state and local health departments in the United States. Each enrolled HCW is followed for 3 years with a semiannual interview, physical examination, and blood specimen collection. None of the HCWs have developed signs or symptoms suggestive of AIDS; 143 (40%) have now been followed for 12 months or longer.

Exposed HCWs have been reported from 33 states and the District of Columbia. Fifty-nine percent of the HCWs were reported from six states: New York (61), California (39), New Jersey (36), Pennsylvania (28), Florida (25), and Texas (23). As of December 31, 1984, the length of follow-up of HCWs ranged from 1 month to 45 months (mean 11 months; median 10 months). Two hundred eight (58%) HCWs were nurses; 66 (18%), physicians or medical students; 31 (9%), laboratory workers; 26 (7%), phlebotomists; 15 (4%), respiratory therapists; and the remaining 15 (4%) had less direct patient contact. Eighty-five percent were white, and 78% were female. Ages ranged from 18 years to 62 years (mean 33 years).

The majority of exposures occurred in direct patient-care areas; 187 (52%) occurred in patients' rooms or on the wards: 99 (27%), in intensive-care units; and seven (2%), in emergency clinics. Thirty-two (9%) incidents took place in laboratories, and 36 (10%) occurred in operating or procedure rooms and morgues. The types of exposures were: needlestick injuries (68%); mucosal exposures (13%); cuts with sharp instruments (10%); and contamination of open skin lesions with potentially infected body fluids (9%). Eighty-eight percent of the exposures were to blood or serum; 6%, to saliva; 2%, to urine; and the remaining 4%, to other body fluids or unknown sources. Postexposure care varied considerably. Forty-eight percent of exposed HCWs received either no specific treatment or local wound care only, while 35% received immune globulin either alone or in combination with other treatment.

Complete epidemiologic data have been collected on 226 of the patients to whom these HCWs were exposed. Two hundred nine (92%) were AIDS patients meeting the CDC surveillance definition, and 17 (8%) were suspected AIDS cases. Two hundred three (97%) of the 209 AIDS patients were in an identified risk group for acquiring AIDS. The distribution of the AIDS cases by disease category included: *Pneumocystis carinii* pneumonia (PCP), 62%; Kaposi's sarcoma (KS), 12%; both KS and PCP, 5%; and other opportunistic infections, 21%.

Tests for T-cell subsets have been performed at CDC on blood specimens from 269 (75%) of the exposed HCWs. The mean T-helper/T-suppressor (Th/Ts) ratio for the initial whole blood sample from these HCWs was 2.2 with a range of 0.4-5.4 (normal range 1.0-3.9). One hundred eighty-three (68%) of these initial blood specimens were obtained within 180 days from the dates of exposures. Six-month and 12-month follow-up Th/Ts ratios were performed on 69 and six of these 269 HCWs, respectively. All Th/Ts ratios on follow-up specimens were within the normal range, including those from nine HCWs whose initial ratios were less than 1.0.

Serologic testing using the enzyme-linked immunosorbent assay (*1*) and the Western blot technique (*2*) for antibody to the human T-lymphotropic virus type III (HTLV-III) has been done, with specific informed consent, on 40 HCWs enrolled in the surveillance system. The mean duration between the date of exposure and the latest serum sample tested was 10.5 months (range 0-29 months; median 8.5 months). The types of exposures included: needlestick injuries (29), cuts with sharp objects (five), mucosal exposures (five), and contamination of open skin lesions (five). None of the HCWs tested were HTLV-III-antibody positive. However, with a sample size of 40, the upper limit of the 95% confidence intervals for this incidence of seropositivity (0%) is 7%.

Reported by Acquired Immunodeficiency Syndrome Needlestick Surveillance Cooperative Group, Immunization Div, Center for Prevention Svcs, Div of Host Factors, Div of Viral Diseases, Hospital Infections Program, Center for Infectious Diseases, CDC

Editorial Note: Because HTLV-III can be transmitted among intravenous drug abusers by sharing needles and through transfusion of blood and blood products, there is concern that HTLV-III could be transmitted to HCWs by unintentional needlestick or other parenteral or mucous-membrane exposures. A recent report describes an HCW in England who is believed to have developed HTLV-III antibody following parenteral exposure to the blood of an AIDS patient (*3*). The HCW reportedly had none of the recognized risk factors for AIDS and remains asymptomatic.

To date, there are no reported cases of AIDS among HCWs in the United States that can be linked to a specific occupational exposure. Of the 8,218 AIDS patients reported to CDC as of February 11, 1985, 278 (3%) have been HCWs. All but 24 (9%) of these HCWs belong to known AIDS risk groups. Epidemiologic investigations have been completed on 17 of these 24 HCWs; four are currently under investigation, and three died before investigations were completed. In six of the 17 completed investigations, nonoccupational exposures were the most likely sources of infection. No known risk factors for infection were identified in the remaining 11 patients; however, specific occupational exposures to definite or suspected AIDS patients could not be documented.

In December 1984, CDC began testing sera from HCWs enrolled in the surveillance system for antibody to HTLV-III. Testing was performed only with the specific informed consent of enrolled personnel and the agreement of cooperating investigators. Initial results from this analysis and from other similar investigations (*4*) suggest the risk of transmission of HTLV-III infection from AIDS patients to HCWs may be very small. Thus, to accurately determine the true risk of transmission of HTLV-III from AIDS patients to HCWs, large cohorts of exposed HCWs must be studied. Additional studies with larger cohorts of HCWs are in progress, and CDC will continue immunologic and serologic testing of HCWs from whom institutional investigators have obtained informed consent.

Studies of seroprevalence of HTLV-III among exposed HCWs are of great value from an epidemiologic perspective. However, serologic testing of asymptomatic HCWs for HTLV-III antibody should be done only with informed consent, and a mechanism should exist for transmitting the test results to the HCW in an appropriate manner. The U.S. Public Health Service has developed specific recommendations for individuals, within or outside known risk groups for AIDS, who test positive for HTLV-III antibody (*5-7*). Health-care professionals should become familiar with and consider these recommendations when serologic testing of asymptomatic HCWs for HTLV-III antibody is contemplated.

Until additional data are available, HCWs should continue to follow previously published precautions when caring for persons with definite or suspected AIDS or when handling specimens from these patients (*8,9*).

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Update: Acquired Immunodeficiency Syndrome — Europe

As of December 31, 1984, 762 cases of acquired immunodeficiency syndrome (AIDS) have been reported to the World Health Organization (WHO) Collaborating Centre on AIDS. During 1984, 417 cases were diagnosed—over half those reported since the disease was first reported and nearly twice the number reported in 1983 (235 cases). The number reported during the last quarter should be considered provisional because of the time lapse between date of diagnosis and notification to the national surveillance centers (Table 1).

For the last 6 months, the greatest increases in the number of cases were observed in France—80 cases (three per week); Federal Republic of Germany—56 cases (two/week); United Kingdom—54 cases (two/week); Netherlands—21 cases (one/week); and Switzerland—13 cases (one/2 weeks).

The 15 countries collaborating with the Centre for the last report (*1*) have reported 125 new cases, an increase of 11 cases per week.

Two countries, Austria and Belgium, have just joined the Centre. Austria had reported seven cases at the first European Meeting on AIDS held in Aarhus, Denmark, in October 1983 and now reports 13 cases (six additional cases); Belgium, which had reported 38 cases, now reports 65 cases (27 additional cases).

The highest rates of AIDS cases per million population (1983 populations, Institut National D'Etudes Démographics [INED], Paris) were observed in Belgium and Denmark (7/million). However, 83% of the Belgian patients (54/65) were Africans, of whom only 18 lived in Belgium before the onset of the first symptoms, in contrast with Denmark, where no African or Caribbean patients have been registered. The rate in Switzerland was six per million; France—five per million; Netherlands—three per million; Federal Republic of Germany and United Kingdom—two per million.

Among the 762 AIDS patients, 376 deaths were reported, for a case-fatality rate of 49% (Table 2). Sixty-one percent of the patients diagnosed 1 year ago and 83% diagnosed 3 years ago have died. Sixty-four percent (484/762) of the patients presented with one or more opportunistic infections; 20% (151/762) had Kaposi's sarcoma (KS) alone; 16% (121/762) opportunistic infection with KS. The category "Other" includes three cases of progressive multifocal leukoencephalitis (France—two; Denmark—one) and three cases of cerebral lymphoma alone (one each in Federal Republic of Germany, Switzerland, and the United Kingdom). The case-fatality rate was 67% in the category "Other"; 60% for opportunistic infection with KS; 55% for opportunistic infection alone; and 24% for KS alone (Table 2).

TABLE 1. Reported acquired immunodeficiency syndrome cases and estimated rates per million population — 17 European countries*

Country	Oct. 1983†	July 1984	Oct. 1984	Dec. 1984	Rates§
Austria	7	0	0	13	1.7
Belgium	38	0	0	65	6.6
Czechoslovakia	0	0	0	0	0.0
Denmark	13	28	31	34	6.6
Finland	0	0	4	5	1.0
France	94	180	221	260	4.8
Federal Republic of Germany	42	79	110	135	2.2
Greece	0	2	2	6	0.6
Iceland	0	0	0	0	0.0
Italy	3	8	10	14	0.3
Netherlands	12	21	26	42	2.9
Norway	0	0	4	5	1.2
Poland	0	0	0	0	0.0
Spain	6	14	18	18	0.5
Sweden	4	7	12	16	1.9
Switzerland	17	28	33	41	6.3
United Kingdom	24	54	88	108	1.9
Total	**260**	**421**	**559**	**762**	**2.0**

*Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and United Kingdom.

†These data were reported at the 1st European Meeting on AIDS held in Aarhus, Denmark, October 1983.

§Based on 1983 populations (INED, Paris).

TABLE 2. Acquired immunodeficiency syndrome cases and number of deaths, by disease category — 17 European countries, through December 31, 1984

Disease category	Cases (%)	Deaths (%)
Opportunistic infection	484 (64)	264 (55)
Kaposi's sarcoma	151 (20)	36 (24)
Opportunistic infection and Kaposi's sarcoma	121 (16)	72 (60)
Others	6 (*A* 1)	4 (67)
Unknown	0 (0)	0 (0)
Total	**762 (100)**	**376 (49)**

TABLE 3. Acquired immunodeficiency syndrome cases, by age group and sex — 17 European countries, through December 31, 1984

Age group	Males	Females	Total No. (%)
0-11 months	4	1	5 (< 1)
1-4 years	0	0	0 (0)
5-9 years	0	0	0 (0)
10-14 years	2	0	2 (< 1)
15-19 years	4	0	4 (< 1)
20-29 years	106	31	137 (18)
30-39 years	335	18	353 (46)
40-49 years	188	8	196 (26)
50-59 years	45	2	47 (6)
≥ 60 years	7	0	7 (< 1)
Unknown	11	0	11 (1)
Total*	**702**	**60**	**762 (100)**

*Sex ratio = 11.7.

Ninety-two percent of the patients were men (Table 3). The sex ratio was 11.7, compared with 15.3 at the last report and can be explained by 20 new cases among women diagnosed in Belgium. Forty-six percent of the patients belonged to the 30- to 39-year age group. The 0- to 1-year age group comprised: one boy from Burundi and one from Zaire diagnosed in Belgium; one French girl with a Zairian father, one Haitian boy, and one Zairian boy diagnosed in France. Two children with hemophilia in the 10- to 14-year age group were diagnosed in France. The 15- to 19-year age group comprised: two hemophilia patients (one each in Austria and Spain); one homosexual (France); and one unspecified case (Federal Republic of Germany).

Cases were geographically distributed as follows (Table 4):

European*: 605 cases (79% of total). Five hundred seventy-eight patients lived in Europe before the onset of the first symptoms of AIDS, and 27 (4%) of the 605 patients lived outside Europe (United States—six; Zaire—four; Haiti—three; and one each in Togo, Gabon, Nicaragua, Venezuela, Ghana, South Africa, Burundi, and Bermuda). For six patients, the country of residence was not specified.

Caribbean: 24 cases (3%). Twenty-two patients lived in Europe before the onset of the first symptoms: 18 Haitians diagnosed in France and one in Belgium; one Dominican and one Jamaican lived in the United Kingdom; one of unspecified origin lived in Switzerland. Two other Haitian patients diagnosed in France lived in Haiti.

African: 111 cases (15%). In the previous report, 8% of the patients were Africans; the increase is due to the participation of Belgium. These cases were diagnosed in seven European countries and originated from 18 African countries. Sixty-seven percent were from Zaire, and 11%, from the Congo. Among the 16 other countries, the number of cases diagnosed in Europe varied from one to three. This distribution cannot be considered representative of the AIDS situation in Africa. The majority (52%) of these patients lived in Europe before the onset of the first symptoms.

*The word European refers to the patients originating from one of the 32 countries belonging to the WHO European region

TABLE 4. Acquired immunodeficiency syndrome cases, by patient risk group and geographic origin — 17 European countries, through December 31, 1984

Patient risk groups	Nationality				
	European	Caribbean	African	Others	Total
1. Male homosexual or bisexual	514	2	5	16	**537**
2. Intravenous-drug abuser	11	0	0	0	**11**
3. Hemophilia patient	20	0	0	0	**20**
4. Transfusion recipient (without other risk factors)	4	0	4	0	**8**
5. 1- and 2-associated	9	0	0	2	**11**
6. No known risk factor					
male	29	17	64	2	**112**
female	15	4	29	0	**48**
7. Unknown	3	1	9	2	**15**
Total	**605**	**24**	**111**	**22**	**762**

Other origins: 22 cases (3%). Most of these patients originated from the American continent: United States—16; and one each in Nicaragua, Argentina, Peru, and Canada. One patient originated from Pakistan, and one, from Australia. Thirteen of these patients did not live in Europe before the onset of the first symptoms.

Among the Europeans: 85% (514/605) were homosexual or bisexual (Table 4); 2% (11/605) were drug abusers; and 1% (9/605), both homosexual and drug abusers. The latter 20 cases were diagnosed in the Federal Republic of Germany—nine; Spain—three; France—three; Austria—two; Italy—two; Switzerland—one.

Three percent (20/605) were hemophilia patients. For four of the 605 European patients, the only risk factor found was blood transfusion. For 7% (44/605), no risk factor was found. The information was not obtained for three patients.

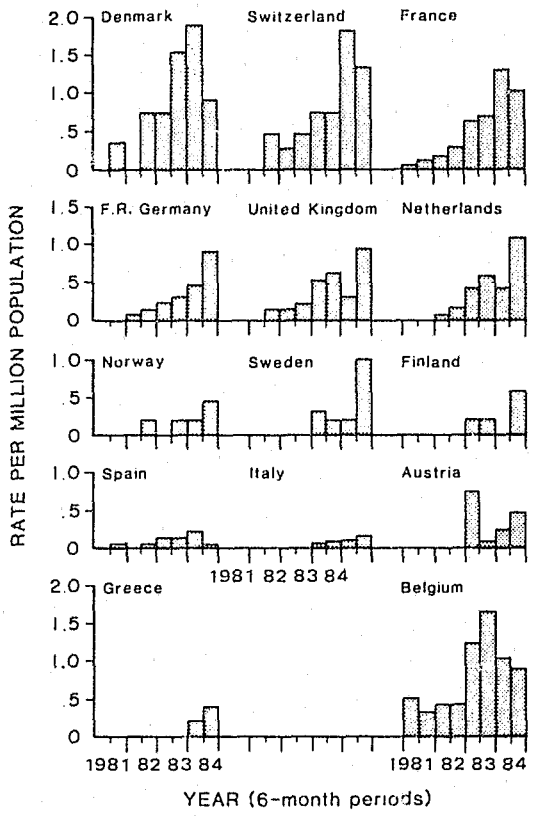
Among the Caribbean patients, two of 24 were homosexual; 21 presented no risk factors; for one, the information was not obtained.

The overall presentation of the progress of the AIDS situation in Europe does not take into account the important differences between the countries. Furthermore, the total increase in the number of cases in each country is only of informative value if it is related to the total population of the country. Figure 1 shows the variation in the rates per million population per half year for each country where cases have been diagnosed. This figure is difficult to interpret given the qualitative differences in the national surveillance systems. Nevertheless, three situations stand out: for six countries (Denmark, France, Netherlands, Federal Republic of Germany, Switzerland, United Kingdom) the general trend of these rates show a constant increase (the data of the second half of 1984 should be considered provisional).

The situation in Belgium is different; stable in 1981 and 1982, it showed an increase in 1983 and a decrease in 1984. This is explained by the arrival of African patients, mainly from Zaire, for treatment in 1983. In 1984, facilities were set up in Zaire for these patients, hence the decrease in the number of cases in Belgium for that year. Of the 65 cases reported, only seven originated from Belgium. For the third group of countries (Austria, Finland, Greece, Italy, Norway, Spain, and Sweden), the half-year trends do not clearly indicate an increase. If the African cases were excluded, Belgium would come into this group.

Editorial Note: As of December 31, 1984, 17 countries were taking part in the surveillance of AIDS in Europe by reporting their respective data to the Centre. Since the last report (October 15, 1984) (*1*), two more countries, Austria and Belgium, have provided data. The Centre used the CDC case definition. One source per country, recognized by the respective national health authorities, provides the information, and each source is responsible for the quality of the data provided.

FIGURE 1. Incidence rates of acquired immunodeficiency syndrome, by 6-month period of diagnosis — 14 European countries, through December 31, 1984*



*Denmark, Switzerland, France, Federal Republic of Germany, and United Kingdom had cases reported before 1981, which are not included.

Reported by JB Brunet, MD, Institut de Médecine et D'Épidémiologie Tropicales, Hopital Claude Bernard (WHO Collaborating Centre on AIDS), Paris, France; Federal Ministry of Health and Environmental Protection, Vienna, Austria; Conseil Supérieur de l'Hygiène Publique, Ministère de la Santé, Brussels, Belgium; Institute of Virology, Bratislava, Czechoslovakia; Statens Serum Institute, Copenhagen, Denmark; Institute of Biomedical Sciences, Tampere, Finland; Direction Générale de la Santé, Paris, France; Robert Koch Institute, West Berlin, Federal Republic of Germany; Ministère de la Santé, Athens, Greece; General Direction of Public Health, Reykjavik, Iceland; Instituto Superiore di Sanita, Rome, Italy; Staatstoezicht op de Volksgezondheid, Leidfehendam, Netherlands; National Institute of Public Health, Oslo, Norway; National Institute of Hygiene, Warsaw, Poland; Ministerio de Sanidad y Consumo, Madrid, Spain; National Bacteriological Laboratory, Stockholm, Sweden; Office Federal de la Santé Publique, Berne, Switzerland; Communicable Disease Surveillance Centre, London, United Kingdom.

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1985 April 26;34:227–228

Disseminated *Mycobacterium bovis* Infection from BCG Vaccination of a Patient with Acquired Immunodeficiency Syndrome

In December 1982, Kaposi's sarcoma and acquired immunodeficiency syndrome (AIDS) were diagnosed in a 29-year-old white homosexual man. A trial of vinblastine sulfate failed to decrease the progression of his skin lesions. In February 1984, when seen in a clinic in Tijuana, Mexico, he was given a BCG vaccination. The expected local lesion from the BCG vaccination healed normally within the next few weeks. In June, he developed chills and fever to 39.4 C (103 F), weakness, fatigue, anorexia, and a mild headache. In July, the site of BCG vaccination on his left arm ulcerated, draining a small amount of pus and blood. A previously enlarged lymph node in the left axilla increased substantially in size and became very tender. Because of the possibility of disseminated BCG infection, treatment was begun with INH 300 mg/day and rifampin 600 mg/day and pyridoxine. Repeatedly [illegible]

well-being. The ulcer healed slowly, and the enlarged lymph node decreased in size and tenderness. Two blood cultures taken June 28 and a culture of the ulcerating lesion taken July 16 grew *Mycobacterium bovis*, BCG strain. A blood culture taken July 23, just before therapy, grew *M. fortuitum*.

Reported by RE Winters, MD, School of Medicine, University of California, Los Angeles, LQ Hanh, MD, Tuberculosis Control Unit, Los Angeles County Dept of Health Svcs, J Chin, MD, State Epidemiologist, California State Dept of Health Svcs; Div of Tuberculosis Control, Center for Prevention Svcs, AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: BCG vaccine contains live mycobacteria derived from a strain of *M. bovis* attenuated through years of serial passage in culture by Calmette and Guerin at the Pasteur Institute, Lille, France. Although BCG has been widely used throughout the world, its use in the United States is limited to those uncommon situations in which uninfected persons are repeatedly exposed to infectious tuberculosis, and other means of preventing infection cannot be applied (*1*). BCG has also been used to stimulate the immune system of patients with various cancers, especially malignant melanoma, with the objective of causing regression of the tumors (*2*). As with any vaccine containing live organisms, however, it is contraindicated in persons with severely impaired immune responses, including those with AIDS, because disseminated infection with the organism contained in the vaccine may result.

M. bovis and *M. tuberculosis* (the *M. tuberculosis* complex) are pathogenic for man and are distinct from the "atypical" mycobacteria that tend to be opportunistic. Infection with *M. bovis* or *M. tuberculosis*, even if disseminated, is generally not considered opportunistic and is, therefore, not used as a marker for AIDS in CDC's surveillance definition of AIDS (*3*). The BCG strain of *M. bovis*, however, being attenuated and not usually a cause of disease, may be considered an opportunist.

Of the 9,760 AIDS patients in the United States reported to CDC as of April 24, 1985, 2.7% were reported to have tuberculosis. Disseminated atypical mycobacterial infection, used as a marker for AIDS, was reported in 3.7%. Another 0.9% were reported to have disseminated infection with an undetermined species of mycobacteria. The true cumulative incidence of mycobacterial infections in AIDS patients is undoubtedly higher. The opportunistic infections reported to CDC's AIDS surveillance program are largely limited to those present at the time AIDS is diagnosed. Disseminated mycobacterial infections are not common among the initial opportunistic infections in AIDS patients, but in one series of 71 AIDS patients, 24 (34%) reportedly developed infection with *M. avium* complex organisms at some time during their illness (*4*). The great majority (94%) of the atypical mycobacterial infections reported to the AIDS surveillance program have been due to *M. avium* complex; 4% were due to *M. kansasii*; and 2%, to other species. Besides the patient reported here, only one other AIDS patient had disseminated *M. fortuitum* reported; the *M. fortuitum* cannot be explained by the BCG vaccine and may represent a contaminated culture rather than a true infection.

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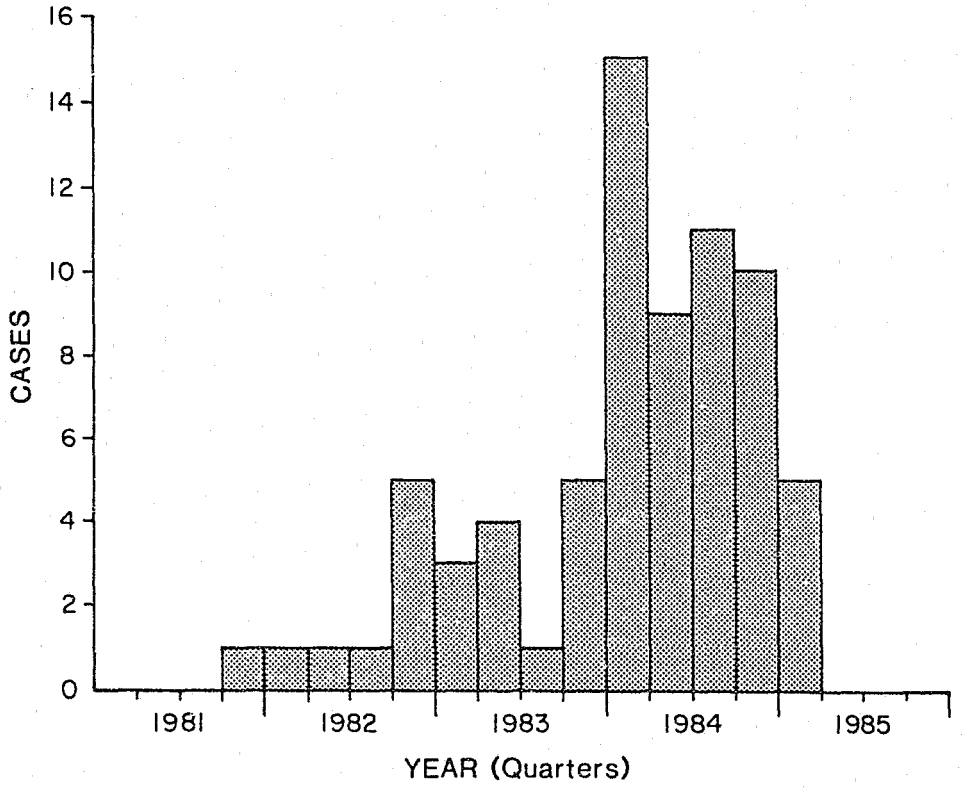
1985 May 3;34:241—243

Changing Patterns of Acquired Immunodeficiency Syndrome in Hemophilia Patients — United States

The pattern of hemophilia-associated AIDS appears to be changing in that the number of cases may be stabilizing or declining, and the characteristics of new cases appear to be changing. As of April 1, 1985, CDC has received reports of 73 cases of hemophilia-associated acquired immunodeficiency syndrome (AIDS) among U S patients. The first case was diagnosed in 1981; eight cases were diagnosed in 1982, 13 in 1983, 45 in 1984, and six thus far in 1985 (Figure 2). Four of these 73 had known risk factors for AIDS other than a coagulation disorder requiring treatment with [illegible] tate. Patients with severe [illegible] for the majority (52 [illegible]

three patients with hemophilia B (hereditary factor IX deficiency), three with von Willebrand's disease, one with an acquired inhibitor to factor VIII, and one with factor V deficiency. These patients resided in 27 different states. Cases reported per state ranged from one to nine (median two).

FIGURE 2. Hemophilia-associated acquired immunodeficiency syndrome, by year — United States, 1981-1985



Ten patients had no documented use of blood products other than factor concentrates in the 5 years preceding their diagnoses. One patient with von Willebrand's disease, diagnosed in January 1985, had no documented use of blood products other than cryoprecipitate in the 3 years preceding diagnosis.

Sera from 29 (40%) of the 73 cases were obtained and tested by the Western blot method (*1*) for antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV); 22 (76%) of the 29 were antibody-positive.

Of the opportunistic infections considered by CDC to be indicative of underlying cellular immune deficiency, *Pneumocystis carinii* pneumonia (PCP) remains the most common infection diagnosed in hemophilia-associated AIDS. Sixty-one (84%) of 73 patients had PCP alone or in combination with one or more other opportunistic infections.

Thirty-eight (52%) of the 73 hemophilia patients with AIDS have died. Seven (20%) of those still alive have survived 1 year or more since diagnosis; one (3%) has survived longer than 2 years.

Surveillance indicates the characteristics of recently diagnosed hemophilia-associated AIDS cases may be changing, and the number of new cases diagnosed by quarter may be stabilizing in this population. Ten of the 23 patients diagnosed since August 1, 1984, have disorders other than severe hemophilia A. This represents a change in proportion from earlier diagnosed cases (10 of 50 [$p = 0.05$]). During 1984, more cases of hemophilia-associated AIDS were diagnosed than in all previous years of surveillance. However, unlike the epidemic pattern for all AIDS, the number of hemophilia-associated AIDS cases in 1984 has not increased in each quarter (Figure 2). It is possible that a significant number of hemophilia-associated AIDS cases not yet reported to CDC have already been diagnosed at some time in 1984, and the temporal distribution of cases is subject to change with receipt of reports of such cases. However, preliminary results from a simulation of 1985 hemophilia/AIDS reporting indicate that the expected number and distribution of cases would not sufficiently change the 1984 hemophilia-AIDS epidemic pattern.

Reported by Div of Host Factors, AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: HTLV-III/LAV has been implicated as the causal agent of AIDS (*2-5*), and in the hemophilia population, commercial factor concentrates are suspected as the vehicle for transmission of the virus (*6-8*). Recently, exposure to HTLV-III/LAV through use of cryoprecipitate has been documented in studies of the seroprevalence (two of six tested) (*9*) and seroconversion (two of 11 seroconverting during a 1-year period) (*10*) in hemophilia patients using this product exclusively. The development of AIDS in three patients with von Willebrand's disease, one of whom had no documented blood product exposure other than cryoprecipitate and no other risk factor for AIDS, is further strong evidence to consider chronic use of cryoprecipitate a definite risk factor for AIDS. This may be especially true for those who are exposed to multiple donors (more than 80 per year). The magnitude of this risk may depend on geographic locality.

Trends in both the number and characteristics of recently reported hemophilia-associated AIDS appear to be changing. Patients with mild or moderate hemophilia and those with von Willebrand's disease tend to use significantly less clotting factor products in their disease therapy than do those with severe hemophilia and are more likely to be treated with products other than commercial factor concentrates. The recent increase in AIDS cases reported among persons with milder hemophilia may reflect earlier exposure of persons with severe hemophilia A to HTLV-III/LAV than of those with mild or moderate hemophilia or von Willebrand's disease. Continuous surveillance will be needed to monitor these trends. Physicians and other health-care personnel are encouraged to report suspected AIDS cases to CDC through their local or state health departments.

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1985 May 10;34:245–248

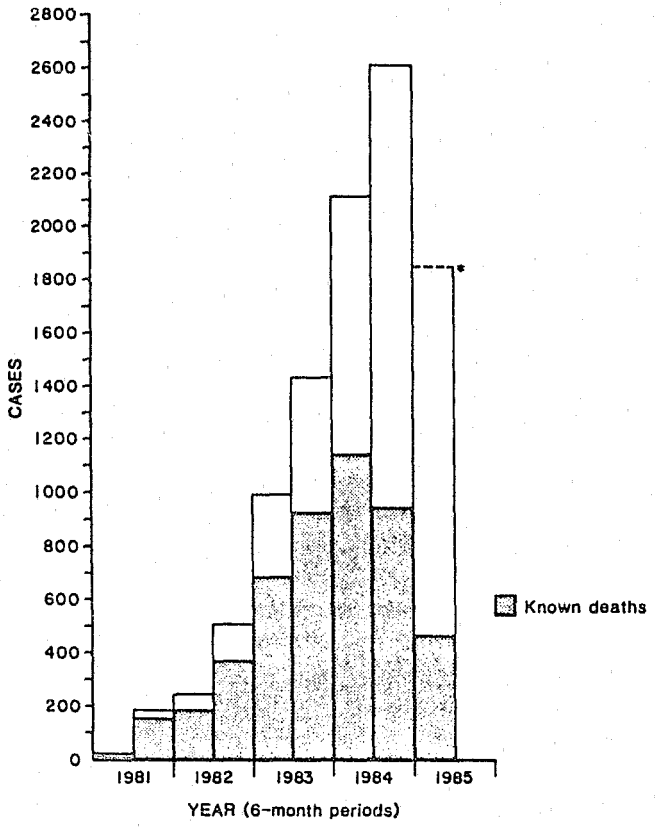
Update: Acquired Immunodeficiency Syndrome — United States

As of April 30, 1985, physicians and health departments in the United States had reported 10,000 patients (9,887 adults and 113 children) meeting the surveillance definition for acquired immunodeficiency syndrome (AIDS) (*1,2*). Since the initial reports of AIDS in the spring of 1981 (*3,4*), the number of cases reported each half-year has increased (Figure 1). Over half of the 10,000 cases have been reported within the last 12 months. Four thousand nine hundred forty-two of all reported patients are known to have died (49% of the adults and 69% of the children); 75% of patients diagnosed before January 1983 are known dead.

Adult patients. Among adult AIDS patients, there has been no significant change over time in distribution by age, race, and sex. Ninety percent of adult patients are 20-49 years old. Sixty percent are white; 25%, black; and 14%, Hispanic. Ninety-four percent are men.

Reported cases have increased substantially in all patient groups. However, some changes in the relative proportion of cases have been noted. Since 1981, the proportion of AIDS cases

FIGURE 1. Acquired immunodeficiency syndrome cases and known deaths, by 6-month period of report — United States, 1981-April 1985



*Data incomplete

in transfusion recipients has increased significantly ($p < 0.01$), while the proportion of cases in "other/unknown" patients has decreased significantly ($p < 0.001$) (Table 1). The latter reflects a smaller rate of increase of AIDS among Haitian-born patients who are placed in the "other/unknown" category. Although there has been a slight increase in the proportion of patients who are homosexual/bisexual men, it is not statistically significant.

TABLE 1. Acquired immunodeficiency syndrome (AIDS) patients, by patient group and date of report — United States, through April 1985

	Cases reported							
	Before May 1983		May 1983-April 1984		May 1984-April 1985			
Patient group	No.	(%)	No.	(%)	No.	(%)	Total	(%)
Adult								
Homosexual/bisexual	992	(71.5)	2,070	(72.5)	4,199	(74.4)	**7,261**	**(73.4)**
IV drug user	233	(16.8)	510	(17.9)	942	(16.7)	**1,685**	**(17.0)**
Hemophilia patient	11	(0.8)	17	(0.6)	37	(0.7)	**65**	**(0.7)**
Heterosexual contact	13	(0.9)	23	(0.8)	45	(0.8)	**81**	**(0.8)**
Transfusion recipient	12	(0.9)	34	(1.2)	88	(1.6)	**134**	**(1.4)**
Other/unknown	126	(9.1)	202	(7.1)	333	(5.9)	**661**	**(6.7)**
Total	**1,387**	**(100.0)**	**2,856**	**(100.0)**	**5,644**	**(100.0)**	**9,887**	**(100.0)**
Pediatric								
Parent with AIDS or at increased risk for AIDS	11	(57.9)	27	(67.5)	43	(79.6)	**81**	**(71.7)**
Hemophilia patient	2	(10.5)	1	(2.5)	3	(5.6)	**6**	**(5.3)**
Transfusion recipient	2	(10.5)	8	(20.0)	5	(9.3)	**15**	**(13.3)**
Other/unknown	4	(21.1)	4	(10.0)	3	(5.6)	**11**	**(9.7)**
Total	**19**	**(100.0)**	**40**	**(100.0)**	**54**	**(100.0)**	**113**	**(100.0)**
TOTAL	**1,406**	**(100.0)**	**2,896**	**(100.0)**	**5,698**	**(100.0)**	**10,000**	**(100.0)**

The proportion of adult patients with Kaposi's sarcoma (KS) alone and with both KS and *Pneumocystis carinii* pneumonia (PCP) has decreased significantly ($p < 0.001$) (Table 2). This is associated with a significant increase in the proportion of cases with PCP and no KS. The distribution of cases with other opportunistic diseases has remained relatively constant.

Adult AIDS patients have been reported from 46 states, the District of Columbia, and three U.S. territories. Among cases reported before May 1983, 47% of the adults were residents of New York. Between May 1984 and April 1985, the proportion of adults reported with AIDS from this state decreased significantly ($p < 0.001$) to 34% of the total.

Pediatric patients. Among AIDS patients under 13 years old, there has been no statistically significant change in distribution by age, race, sex, and disease presentation over time. Fifty-eight percent of the pediatric patients were under 1 year old at diagnosis. Fifty-five percent are black; 22%, white; and 21%, Hispanic. Sixty-three percent are male. Sixty-eight percent had PCP without KS; 2% had KS and PCP; 4% had KS without PCP; and 26% had other opportunistic diseases. Eighty-one (72%) of the 113 pediatric patients came from families in which one or both parents had AIDS or were at increased risk for developing AIDS; 15 (13%) had received transfusions of blood or blood components before their onsets of illness, and six (5%) had hemophilia. Risk factor information on the parents of the 11 (10%) remaining patients is incomplete. Pediatric cases have been reported from 17 states; cases reported per state ranged from one to 53 (median one). Eighty-two percent of the pediatric cases have been reported from New York, New Jersey, Florida, and California. Of the 81 pediatric patients with a parent with AIDS or at increased risk for AIDS, 69 (85%) were residents of New York, New Jersey, or Florida—states in which over 84% of the heterosexual adult cases were reported.

Reported by State and Territorial Epidemiologists; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The number of AIDS cases reported nationally continues to increase. The first 5,000 diagnosed cases were reported to CDC between June 1981 and June 1984 (37 months); the last 5,000 cases have been reported since June 1984 (10 months).

Haitian-born AIDS patients have now been placed into the "other/unknown" group. The previous separate listing for Haitian-born patients has been discontinued in light of current epidemiologic information that suggests both heterosexual contact and exposure to contaminated needles (not associated with intravenous [IV] drug abuse) play a role in disease transmission (*5-7*). Similar risk factors have been described for AIDS patients in some central African countries (*8-10*). Evidence from surveillance case report forms is insufficient to establish the specific modes of transmission in particular cases reported among Haitian immigrants.

Among Haitian-American control patients who were age- and sex-matched to patients with AIDS, the prevalence of antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) was 5% (*7*). While this seroprevalence is lower than that found in other patient groups, it is several times higher than that seen in random blood donors. The following U.S. Public Health Service guidelines continue to apply: blood and/or plasma should not be donated by persons with symptoms and signs of AIDS, sexual partners of AIDS patients, sexually active homosexual/bisexual men with multiple partners, Haitian entrants to the United States, present or past abusers of IV drugs, patients with hemophilia, and sexual partners of individuals at increased risk for AIDS (*11*).

The proportion of AIDS patients with a history of blood transfusion as their only risk factor

TABLE 2. Percent distribution of adult acquired immunodeficiency syndrome patients, by disease and date of report — United States, through April 1985

Disease*	Before May 1983	May 1983-April 1984	May 1984-April 1985	Total
KS, no PCP	24.7	24.1	18.9	**21.2**
KS and PCP	10.3	6.7	4.3	**5.8**
PCP, no KS	51.3	51.7	59.5	**56.1**
Other opportunistic diseases	13.7	17.5	17.2	**16.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**

*KS = Kaposi's sarcoma; PCP = *Pneumocystis carinii* pneumonia

has increased significantly during the last 2 years, although these cases still contribute less than 2% of the total. Because the time from infection with HTLV-III/LAV to onset of AIDS may be several years, persons exposed to the virus through transfusion before institution of the self-deferral guidelines for blood donors in 1983 and screening of blood for HTLV-III/LAV antibody in 1985 may remain at risk of AIDS.

Over 93% of all AIDS patients who have KS are homosexual/bisexual men (*12*). Although the proportion of homosexual/bisexual men reported with AIDS has been increasing, the proportion with KS has decreased significantly and has led to an overall decrease in the proportion of adult cases with KS. The reasons for the change in proportion of KS cases among homosexual/bisexual men are unclear.

Forty-five states, the District of Columbia, and Puerto Rico now require reporting of AIDS to health departments. Although the majority of cases have been reported from a few states, proportionately greater increases have recently been noted from other states. The geographic distribution of AIDS among children with parents in high-risk groups is similar to that seen for heterosexual adult AIDS patients. Since several years usually separate acquisition of infection with HTLV-III/LAV and onset of AIDS, current reports of AIDS cases may not reflect the present geographic distribution of infected persons.

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1985 May 17;34:275—276

World Health Organization Workshop: Conclusions and Recommendations on Acquired Immunodeficiency Syndrome

An international conference on acquired immunodeficiency syndrome (AIDS), sponsored by the U.S. Department of Health and Human Services and the World Health Organization (WHO), was held in Atlanta, Georgia, April 15-17, 1985. It was attended by over 3,000 participants from 50 countries and was followed on April 18-19 by a WHO consultation to review the information presented at the conference and to assess its international implications.

The group of WHO consultants concluded that information is now sufficient to permit health authorities to take actions that may decrease the incidence of AIDS among certain risk groups. The group submitted the following conclusions and recommendations:

1. WHO should:
   a. Establish a network of collaborating centers with special expertise in the field. The centers should assist in training staff members and providing reference panels of sera, evaluation of diagnostic tests, and provision of advice on the production of working reagents. They should also assist in preparing educational material and organizing studies to determine the natural history of the disease and the extent of infection in different parts of the world.

b. Coordinate global surveillance of AIDS using a compatible reporting format and the currently accepted case definition. WHO should disseminate these data and other important developments on the disease as widely and as rapidly as possible.
c. Assist in developing an effective vaccine, and when appropriate, developing international requirements for the vaccines. WHO should take an active role in facilitating the evaluation of candidate vaccines.
d. Encourage and assist in periodic serologic studies in countries where AIDS has yet to be recognized and should ensure the collection of comparable data and representative selections of sera, since lymphadenopathy-associated virus/human T-lymphotropic virus type III (LAV/HTLV-III) infection precedes AIDS in an individual or a community, early recognition will require serologic studies in groups with potential risk of infections.

2. Member countries should:
a. Inform the public that LAV/HTLV-III infection is acquired through heterosexual and homosexual intercourse, needle-sharing by intravenous drug abusers, transfusion of contaminated blood and blood products, transmission by infected mothers to their babies, and probably repeated use of needles and other unsterile instruments used for piercing skin/mucous membranes. Information should be provided about the risk of LAV/HTLV-III infection and AIDS, especially to those men and women who may be at increased risk because of multiple sexual partners. There is currently no evidence of spread of LAV/HTLV-III by casual social contact even within households. Provision of timely and accurate information on these points is recommended to allay inappropriate public concern.
b. Ensure that health-care workers are informed about AIDS and LAV/HTLV-III infection, modes of transmission, clinical spectrum, available programs of management (including psychosocial support), and methods for prevention and control.
c. Assess the risk that AIDS poses to each country's population and establish methods of diagnosis, surveillance, and laboratory testing, including specific tests for LAV/HTLV-III.
d. Screen, where feasible, potential donors of blood and plasma for antibody to LAV/HTLV-III, and not use positive units for transfusion or for the manufacture of products where there is a risk of transmitting infectious agents. Potential donors should be informed about the testing in advance of the donation.
e. Reduce the risk of transmission of LAV/HTLV-III by factor VIII and IX concentrates by treating them by heat or other proven methods of inactivation. The use of such products is recommended.
f. Inform potential donors of organs, sperm, or other human material about AIDS, and encourage groups at increased risk of infection to exclude themselves from donating. Whenever possible, serologic testing should be performed before these materials are used. This is particularly important when donor material is collected from an unconscious or deceased patient on whom relevant information may be absent.
g. Refer individuals with positive tests for antibody to LAV/HTLV-III for medical evaluation and counseling. Such people should be encouraged to inform their health-care attendants of their status.
h. Develop guidelines for the total care of patients and for handling their specimens in hospital and other settings. These guidelines should be similar to those that have been effective for care of patients with hepatitis B.
i. Develop codes of good laboratory practice to protect staff against risk of infection. Such recommendations may be based on those found in the Laboratory Biosafety Manual published by WHO (*7*). The level of care required for work with specimens from patients infected with LAV/HTLV-III is similar to that required with hepatitis B. The use of class II biologic safety cabinets is recommended. These cabinets are adequate for containment of other agents, such as herpes and hepatitis viruses, mycobacteria, and protozoa, that may be present in the specimens. For work involving production and purification of LAV/HTLV-III, P3 biosafety containment levels must be employed.
j. Collect and store serum samples from representative laboratory workers at the time of employment and at regular intervals thereafter, to be able to assess the risk of laboratory acquired infection and effectiveness of biosafety guidelines. Countries should provide this information to WHO for collation and dissemination. Provision of samples and testing should be carried out with the informed consent of the subjects.

k. Be aware of the importance of keeping confidential information about the results of serologic testing and the identity of AIDS patients. Serologic testing should be undertaken with the informed consent of the subject.

Abstracted from WHO Weekly Epidemiological Record *1985;60:129-39.*

Reference

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1985 May 24;34:294

Testing Donors of Organs, Tissues, and Semen for Antibody to Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus

The U.S. Public Health Service has recommended that all donated blood and plasma be tested for antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the virus that causes acquired immunodeficiency syndrome (AIDS) (*1*). It is additionally recommended that blood or serum from donors of organs, tissues, or semen intended for human use be similarly tested and that the test result be used to evaluate the appropriate use of such materials from these donors. Although AIDS has not been reported to have been associated with such use, semen and other body fluids, including blood, may harbor the virus. Thus, organs, tissues, and semen obtained from HTLV-III/LAV antibody-positive persons must be considered as potentially infectious. Persons in groups having an increased risk for AIDS should not donate organs, tissues, or semen, regardless of the result of the antibody test; this is the same policy currently followed for blood donations. It is recognized that the circumstances of organ procurement and the logistics of transplantation may in some instances not permit the use of an HTLV-III/LAV test. However, when feasible such testing is prudent.

Reported by U.S. Food and Drug Administration; Alcohol, Drug Abuse, and Mental Health Administration; National Institutes of Health; Health Resources and Svcs Administration; CDC.

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1985 June 28;34:373–375

Revision of the Case Definition of Acquired Immunodeficiency Syndrome for National Reporting — United States

Patients with illnesses that, in retrospect, were manifestations of acquired immunodeficiency syndrome (AIDS) were first described in the summer of 1981 (*1,2*). A case definition of AIDS for national reporting was first published in the *MMWR* in September 1982 (*3,4*). Since then, the definition has undergone minor revisions in the list of diseases used as indicators of underlying cellular immunodeficiency (*5-8*).

Since the 1982 definition was published, human T-cell lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) has been recognized as the cause of AIDS. The clinical manifestations of HTLV-III/LAV infection may be directly attributable to infection with this virus or the result of secondary conditions occurring as a consequence of immune dysfunction caused by the underlying infection with HTLV-III/LAV. The range of manifestations may include none, nonspecific signs and symptoms of illness, autoimmune and neurologic disorders, a variety of opportunistic infections, and several types of malignancy. AIDS was defined for national reporting before its etiology was known and has encompassed only certain secondary conditions that reliably reflected the presence of a severe immune dysfunction. Current laboratory tests to detect HTLV-III/LAV antibody make it possible to include additional serious conditions in the syndrome, as well as to further improve the specificity of the definition used for reporting cases.

The current case definition of AIDS has provided useful data on disease trends, because it is precise, consistently interpreted, and highly specific. Other manifestations of HTLV-III/LAV infections than those currently proposed to be reported are less specific and less likely to be consistently reported nationally. Milder disease associated with HTLV-III/LAV infections and

asymptomatic infections may be reportable in some states and cities but will not be nationally reportable. Because persons with less specific or milder manifestations of HTLV-III/LAV infection may be important in transmitting the virus, estimates of the number of such persons are of value. These estimates can be obtained through epidemiologic studies or special surveys in specific populations.

Issues related to the case definition of AIDS were discussed by the Conference of State and Territorial Epidemiologists (CSTE) at its annual meeting in Madison, Wisconsin, June 2-5, 1985. The CSTE approved the following resolutions:

1. that the case definition of AIDS used for national reporting continue to include only the more severe manifestations of HTLV-III/LAV infection; and
2. that CDC develop more inclusive definitions and classifications of HTLV-III/LAV infection for diagnosis, treatment, and prevention, as well as for epidemiologic studies and special surveys; and
3. that the following refinements be adopted in the case definition of AIDS used for national reporting:
   a. In the absence of the opportunistic diseases required by the current case definition, any of the following diseases will be considered indicative of AIDS if the patient has a positive serologic or virologic test for HTLV-III/LAV:
      (1) disseminated histoplasmosis (not confined to lungs or lymph nodes), diagnosed by culture, histology, or antigen detection;
      (2) isosporiasis, causing chronic diarrhea (over 1 month), diagnosed by histology or stool microscopy;
      (3) bronchial or pulmonary candidiasis, diagnosed by microscopy or by presence of characteristic white plaques grossly on the bronchial mucosa (not by culture alone);
      (4) non-Hodgkin's lymphoma of high-grade pathologic type (diffuse, undifferentiated) and of B-cell or unknown immunologic phenotype, diagnosed by biopsy;
      (5) histologically confirmed Kaposi's sarcoma in patients who are 60 years old or older when diagnosed.
   b. In the absence of the opportunistic diseases required by the current case definition, a histologically confirmed diagnosis of chronic lymphoid interstitial pneumonitis in a child (under 13 years of age) will be considered indicative of AIDS unless test(s) for HTLV-III/LAV are negative.
   c. Patients who have a lymphoreticular malignancy diagnosed more than 3 months after the diagnosis of an opportunistic disease used as a marker for AIDS will no longer be excluded as AIDS cases.
   d. To increase the specificity of the case definition, patients will be excluded as AIDS cases if they have a negative result on testing for serum antibody to HTLV-III/LAV, have no other type of HTLV-III/LAV test with a positive result, and do not have a low number of T-helper lymphocytes or a low ratio of T-helper to T-suppressor lymphocytes. In the absence of test results, patients satisfying all other criteria in the definition will continue to be included.

CDC will immediately adopt the above amendments to the case definition of AIDS for national reporting. This revision in the case definition will result in the reclassification of less than 1% of cases previously reported to CDC. The number of additional new cases reportable as a result of the revision is expected to be small. Cases included under the revised definition will be distinguishable from cases included under the old definition so as to provide a consistent basis for interpretation of trends. CDC will also develop draft classifications for disease manifestations of HTLV-III/LAV infections other than AIDS, distribute these widely for comment, and publish the results.

Reported by Conference of State and Territorial Epidemiologists; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

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1985 June 28;34:375—376

Results of Human T-Lymphotropic Virus Type III Test Kits Reported from Blood Collection Centers — United States, April 22,-May 19, 1985

In March 1983, the U.S. Public Health Service (PHS) recommended that members of groups at increased risk for acquired immunodeficiency syndrome (AIDS) refrain from donating plasma and/or blood (*1*). The recommendation was made to decrease the risk of AIDS associated with the administration of blood or blood products, which accounts for about 2% of all reported AIDS cases in the United States (*2*).

Since that recommendation, evidence has shown that a newly recognized retrovirus, human T-lymphotropic virus type III (HTLV-III), is the cause of AIDS (*3-5*). An ELISA test designed to detect antibody to HTLV-III was developed. A previous report described serologic surveys with use of this test (*6*). In January 1985, the PHS issued provisional recommendations for screening donated blood and plasma for antibody to HTLV-III (*6*). In early March, ELISA test kits developed for detecting antibody to HTLV-III in donated blood and plasma were licensed and made commercially available.

The American Red Cross, the Council of Community Blood Centers, and the American Association of Blood Banks have provided data on test kit results for the 4-week period April 22, to May 19, 1985. During this period, 131 blood centers and banks reported results from screening 593,831 units of blood. An initially reactive test was found for 5,313 units (0.89%); 1,484 units (0.25%) were repeatedly reactive.* Repeatedly reactive rates varied by region of the country, ranging from 0.08% to 0.32% (Table 1).

*A sample that is reactive on two independent ELISA assays (done in duplicate at the same time or singly at different times) is defined as repeatedly reactive. If tested three times, and found reactive twice, it is also defined as repeatedly reactive.

TABLE 1. Number of blood units screened for HTLV-III and percentage repeatedly reactive, by geographic region—United States, April 22,-May 19, 1985

	North-west	North-east	South-west	South-east	Total
Total units tested	27,174	269,032	116,812	180,813	**593,831**
Repeatedly reactive (%)	0.08	0.32	0.24	0.18	**0.25**

Reported by the American Red Cross; Council of Community Blood Centers; American Association of Blood Banks; Office of Epidemiology and Biostatistics, Center for Drugs and Biologics, U.S. Food and Drug Administration.

Editorial Note: The data shown represent about 70% of all blood collected in the United States during the 1-month period. They demonstrate rapid implementation of HTLV-III antibody screening nationally. Since these data represent initial results of testing by many centers, future results may vary. It is not possible from these data to determine how many of the repeatedly reactive samples represent true HTLV-III infection or are false positives. Additional data correlating screening results and other test methods, such as Western blot, will be presented at a conference sponsored by CDC, the U.S. Food and Drug Administration, and the National Institutes of Health (NIH) to be held at NIH on July 31, 1985. Organizations wishing to send representatives to this conference or persons wishing to attend should contact one of the three agencies for additional information.

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1985 Aug 2: 34:471-475

Update: Acquired Immunodeficiency Syndrome — Europe

As of March 31, 1985, 940 cases of acquired immunodeficiency syndrome (AIDS) have been reported to the World Health Organization (WHO) Collaborating Centre on AIDS (Table 1). One hundred seventy-eight new cases were reported by the 17 countries corresponding with the Centre since December 31, 1984 (*1*), an average increase of 14 cases per week.

The greatest increases in the number of cases were observed in: France—47 new cases (three to four per week); United Kingdom—32 (two to three/week); and the Federal Republic of Germany—27 (two to three/week). In four countries (Belgium, Netherlands, Spain, and Switzerland), an increase of one case/week was noted; for the other 10 countries, zero to eight new cases were reported from January through March.

AIDS cases per million population were calculated from 1983 population data (Institut National d'Etudes Demographiques, [INED], Paris). The highest rates were noted in Denmark—8.0; Switzerland—7.9; and France—5.6. These rates are low compared to the U.S. rate of 40.9 (April 1, 1985). The situation in Belgium is special, since 77% of the cases originate from Africa.

A total of 468 deaths were reported for the 940 cases (case-fatality rate: 50%). Fifty-two percent of the AIDS patients diagnosed 1 year ago and 86% of those diagnosed 3 years ago have died (Figure 2). Six hundred three patients (64%) presented with one or more opportunistic infections; 188 (20%) had Kaposi's sarcoma (KS) alone; and 143 (15%) had opportunistic infections with KS (Table 2). The category "Other" (six cases) includes three cases of progressive multifocal leukoencephalopathy (France—two; Denmark—one); two cases of isolated cerebral lymphoma (Switzerland and United Kingdom—one each), and one isolated Burkitt lymphoma of the brain (Federal Republic of Germany). The highest case-fatality rate (65%) was noted for patients with both opportunistic infection and KS. The case-fatality rate for opportunistic infection alone was 54%, and for KS alone, 24%.

Males accounted for 92% of the cases (Table 3). The male to female ratio was 11:1, compared with 15:1 for the United States. Forty-five percent of cases occurred in the 30- to 39-year age group.

Cases were geographically distributed as follows (Table 4):

European*: 756 cases (80% of total). Seven hundred twenty-five patients were living in Europe before the onset of the first symptoms, and 31 (4%) were living overseas (Zaire—10; United States—nine; Haiti—two; and one each in Bermuda, Burundi, Congo, Gabon, Ghana, Nicaragua, South Africa, Togo, and Venezuela). The country of residence was not specified for one patient.

Caribbean: 32 cases (3%). Thirty patients were living in Europe before the onset of the first symptoms: 26 Haitians diagnosed in France and one in Belgium; one Dominican and one Jamaican were living in the United Kingdom; one of unspecified origin was living in Switzerland. Two other Haitians diagnosed in France were living in Haiti.

African: 124 cases (13%). These cases were diagnosed in seven European countries and originated from 18 African countries. Sixty-five percent were from Zaire, and 10%, from the Congo. Among the remaining 16 countries, the number of cases varied from one to four. Two

*The word European refers to the patients originating from one of the 32 countries belonging to the WHO European region.

patients were of unknown origin. Sixty-seven patients (54%) were living in Europe before the onset of the first symptoms. Fifty-five resided in Africa, and one, in the United States; the country of residence was unknown in one case.

Other origins: 28 cases (3%). Most of these patients originated from the American continent: United States—18; Canada—one; two each from Argentina and Brazil; and one each from Nicaragua, Peru, and South America (country unknown). One patient originated from Australia, and, one, from Pakistan. Twelve of these patients were not living in Europe before the onset of the first symptoms (United States—nine; Africa—one; unknown—two).

TABLE 1. Reported acquired immunodeficiency syndrome cases and estimated rates per million population—17 European countries

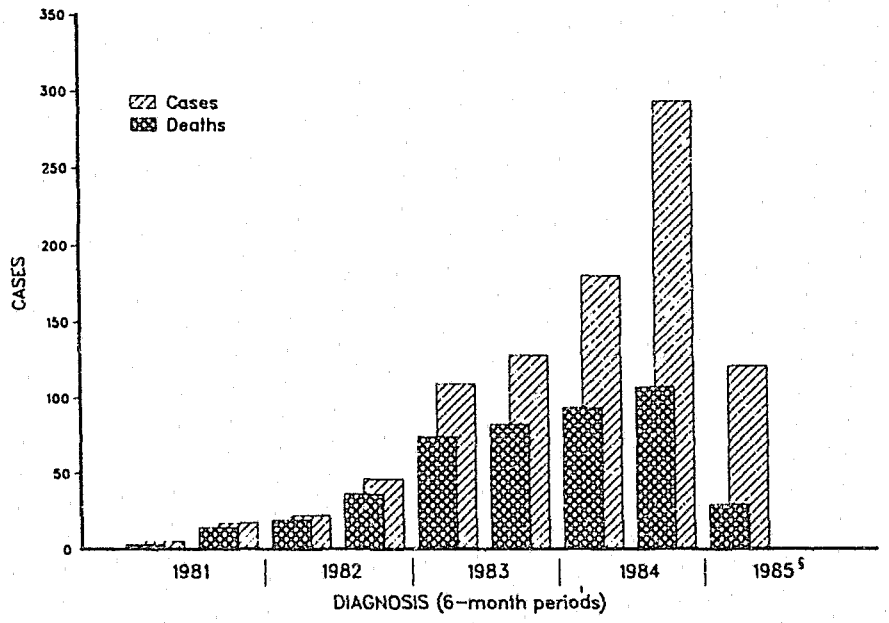
Country	Oct. 1983*	Oct. 1984	Dec. 1984	Mar. 1985	Rates†
Austria	7	-	13	13	1.7
Belgium	38	-	65	81	8.2
Czechoslovakia	0	0	0	0	0.0
Denmark	13	31	34	41	8.0
Finland	-	4	5	5	1.0
France	94	221	260	307	5.6
Federal Republic of Germany	42	110§	135	162	2.6
Greece	-	2§	6	7	0.7
Iceland	0	0	0	0	0.0
Italy	3	10	14	22	0.4
Netherlands	12	26	42	52	3.6
Norway	-	4	5	8	2.0
Poland	0	0	0	0	0.0
Spain	6	18	18	29	0.8
Sweden	4	12	16	22	2.7
Switzerland	17	33	41	51	7.9
United Kingdom	24	88	108	140	2.5
Total	**253**	**559**	**762**	**940**	**2.4**

*These data were reported at the First European Meeting on AIDS held in Aarhus, Demark, October, 1983.

†Based on 1983 populations, INED, Paris.

§Data of July 15, 1984.

FIGURE 2. Acquired immunodeficiency syndrome cases and number of deaths, by 6-month period of diagnosis — 17 European countries,* January 1, 1981-March 31, 1985†



*Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and United Kingdom.

†Before 1981, 19 cases, including 11 deaths, were reported.

§January-March 1985.

TABLE 2. Acquired immunodeficiency syndrome cases and number of deaths, by disease category — 17 European countries,* through March 31, 1985

Disease category	Cases (%)	Deaths (%)
Opportunistic infection	603 (64.1)	324 (53.7)
Kaposi's sarcoma	188 (20.0)	46 (24.4)
Opportunistic infection and Kaposi's sarcoma	143 (15.2)	93 (65.0)
Other	6 (0.6)	5 (83.3)
Unknown	0 (0.0)	0 (0.0)
Total	**940 (100.0)**	**468 (49.8)**

*Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Italy, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and United Kingdom.

TABLE 3. Acquired immunodeficiency syndrome cases, by age group and sex — 17 European countries, through March 31, 1985

Age group	Males	Females	Sex ratio	Total No. (%)
0-11 mos.	5	5	1:1	10 (1.1)
1-4 yrs.	0	0		
5-9 yrs.	2	0		2 (0.2)
10-14 yrs.	2	0		2 (0.2)
15-19 yrs.	4	0		4 (0.4)
20-29 yrs.	142	37	4:1	179 (19.0)
30-39 yrs.	399	22	18:1	421 (44.8)
40-49 yrs.	226	9	25:1	235 (25.0)
50-59 yrs.	57	5	11:1	62 (6.6)
≥ 60 yrs.	14	1	14:1	15 (1.6)
Unknown	10	0		10 (1.1)
Total	**861**	**79**	**11:1**	**940 (100.0)**

TABLE 4. Acquired immunodeficiency syndrome cases, by patient risk group and geographic origin — 17 European countries, through March 31, 1985

Patient risk groups	Nationality				Total
	European	Caribbean	African	Other	
1. Male homosexual or bisexual	627	4	9	21	661
2. Intravenous drug abuser	25	-	-	-	25
3. Hemophilia patient	27	-	-	1	28
4. Transfusion recipient (without other risk factors)	11	-	5	-	16
5. 1- and 2-associated	10	-	-	2	12
6. No known risk factor					
male	33	20	67	2	122
female	18	7	32	-	57
7. Unknown	5	1	11	2	19
Total	**756**	**32**	**124**	**28**	**940**

Among the 756 European AIDS patients, 627 (83%) were homosexual or bisexual. Twenty-five patients (3%) were drug abusers, and 10 (1%), both homosexual and drug abusers (Table 4); these 35 cases were diagnosed in: Federal Republic of Germany—11; Spain—10; France and Italy—five each; Austria—two; and Switzerland and United Kingdom—one each.

Twenty-seven (3%) were hemophilia patients diagnosed in: Federal Republic of Germany—11; Spain—six; United Kingdom—four; France—three; and one each in Austria, Greece, and Sweden. One German hemophilia patient was reported as being both homosexual and a drug abuser.

For 11 patients (1%), the only risk factor found was blood transfusion. These cases were diagnosed in: France—seven; Belgium—two; and Netherlands and United Kingdom—one each. Four of these 11 patients had received blood transfusions overseas: one diagnosed in the Netherlands had undergone surgery in the United States; one diagnosed in France had received blood transfusions in Haiti and Martinique; and two diagnosed in Belgium had received transfusions in Zaire.

For 51 patients (5%), no risk factor was found, and the information was not obtained in five cases.

The AIDS epidemic continues to spread in Europe. The distribution of patients by age, sex, and geographic origin is the same as in the previous reports. Homosexuals are still the major risk group, but cases among intravenous drug abusers have now been reported in seven countries.

AIDS cases related to the use of clotting factor or to blood transfusions are also increasing. Cases among hemophilia patients have been reported in seven European countries. In some of these countries, hemophilia patients account for a high percentage of the total number of AIDS cases reported at a national level: Spain—21% (six of 29 cases); Greece—14% (1/7); Austria—8% (1/13); Federal Republic of Germany—7% (11/162); Sweden—5% (1/22); United Kingdom—3% (4/140); and France—1% (3/307). Among the hemophiliac population of these countries, AIDS cases vary from one to three per thousand. All seven countries have imported blood products from the United States in the past few years.

Two countries have reported cases among recipients of blood collected through the respective national blood banks (France—seven; United Kingdom—one). This indicates that, in European countries in which an AIDS focus is developing, the use of local blood products is not sufficient to ensure the safety of transfusions. Other measures recognized by the WHO Collaborating Centre on AIDS that can be taken to improve safety are: (1) preferential use, when possible, of cryoprecipitates rather than concentrates of factor VIII; (2) use of heat-treated products; (3) selection of blood donors according to identified risk groups; and (4) screening anti-lymphadenopathy-associated virus/human T-lymphotropic virus type III (LAV/HTLV-III)-carrier blood donors.

Finally, it is important to note that AIDS cases related to transfusion of blood or blood components are mainly the consequence of the dissemination of the AIDS virus in the general population. The transmission of LAV/HTLV-III by sexual contact is, at present, the principal route of dissemination. Health education programs (information on subjects in exposed populations, training health-care workers with respect to problems created by AIDS) are essential to set up public health strategies. These strategies must be selected by each country depending on the respective epidemiologic characteristics, sociocultural conditions and the available resources.

Editorial Note: As of March 31, 1985, 17 countries were participating in the surveillance of AIDS in Europe by reporting their respective data to the Centre, which uses the CDC case definition. One source per country, recognized by the respective national health authorities, provides the information. The national data are noted on standard tables; therefore, each source is responsible for the quality of the data provided.

Reported by JB Brunet, MD, R Ancelle, MD, Institut de Médecine et d'Épidémiologie Africaines et Tropicales (WHO Collaborating Centre on AIDS), Paris, France; Federal Ministry of Health and Environmental Protection, Vienna, Austria; Conseil Supérieur de l'Hygiène Publique, Ministère de la Santé, Brussels, Belgium; Institute of Virology, Bratislava, Czechoslovakia; Statens Serum Institute, Copenhagen, Denmark; Institute of Biomedical Sciences, Tampere, Finland; Direction Générale de la Santé, Paris, France; Robert Koch Institute, West Berlin, Federal Republic of Germany; Ministry of Health, Athens, Greece; General Direction of Public Health, Reykjavik, Iceland; Istituto Superiore di Sanità, Rome, Italy; Staatstoezicht op de Volksgezondheid, Leidshendam, Netherlands; National Institute of Public Health, Oslo, Norway; National Institute of Hygiene, Warsaw, Poland; Ministerio de Sanidad y Consumo, Madrid, Spain; National Bacteriological Laboratory, Stockholm, Sweden; Office Federale de la Santé Publique, Berne, Switzerland; Communicable Disease Surveillance Centre, London, United Kingdom.

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1985 Aug 9; 34:477—478

Update: Public Health Service Workshop on Human T-Lymphotropic Virus Type III Antibody Testing — United States

The enzyme immunoassay (EIA) serologic tests to detect antibody to human T-lymphotropic virus type III (HTLV-III) are highly sensitive and specific, according to reports presented at a U.S. Public Health Service Workshop on HTLV-III Antibody Testing on July 31, 1985. The tests are currently being used at blood banks, plasma collection centers, health departments, and selected clinical centers throughout the United States.

The U.S. Food and Drug Administration reported cumulative HTLV-III antibody test data from more than 1.1 million units of blood collected at 155 centers through June 16, 1985. Of these, 2,831 (0.25%) were reported as positive based on a repeatedly reactive EIA test. The pattern of positive tests varied slightly in different regions of the country and by test kit used.

The Atlanta Region of the American Red Cross (ARC) and CDC reported data from testing more than 51,000 blood donors, of whom 0.23% were repeatedly reactive by the Abbott EIA method.* Among the specimens from 106 blood donors with repeatedly reactive tests, 34 (32%) were strongly reactive (ratio of specimen absorbance to cutoff value 7.0 or greater). EIA tests categorized as strongly reactive correlated highly with both positive Western blot tests (94%) and culture for HTLV-III/lymphadenopathy-associated virus (LAV) (56%).

Of 220 donors whose tests were initially reactive and subsequently negative, as well as a random sample of 50 with an initially negative EIA test, none had either a positive Western blot test or positive culture. Among those donors notified and interviewed to date, 16 (89%) of 18 with strongly reactive EIA tests had identifiable risk factors for HTLV-III/LAV infection, while none of 20 with weakly reactive tests had identifiable risk factors.

To determine the sensitivity of the Abbott EIA test in high-risk persons, virus isolations were attempted from homosexual men attending a clinic for sexually transmitted diseases in San Francisco, California. None of 70 men with negative HTLV-III antibody tests had a positive culture, while 43 (60%) of 72 with repeatedly reactive tests were culture-positive. Among the 72 EIA-positive sera in this portion of the study, 70 (97%) were considered to be highly reactive. Ninety-seven percent of those EIA-positive specimens tested to date have had a positive Western blot test.

Data from other blood banking organizations paralleled the findings of the ARC/CDC study in suggesting that approximately one-third of EIA-positive sera from blood donors were strongly reactive, regardless of the test kit used. Donors with strongly reactive EIA tests were also highly likely to have positive Western blot tests and to have positive EIA tests by other test kits.

Weakly reactive EIA tests correlated poorly with positive Western blot tests and were judged to be nonspecific for HTLV-III/LAV infection. The reason for nonspecific test reactivity is unknown, but proposed refinements in the test may eliminate many of the low level reactions.

Reported by Center for Drugs and Biologics, U.S. Food and Drug Administration; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Based on available data, only about 0.25% (1 in 400) blood donors have repeatedly reactive EIA tests to HTLV-III antibody. Approximately 0.08% (1 in 1,200) donors were found to have strongly reactive EIA tests, and these donors were likely to have other test results (Western blot, HTLV-III/LAV culture) that suggested they had been infected with HTLV-III/LAV.

Thus, in less than 5 months, serologic tests for HTLV-III antibody have been introduced and demonstrated to be highly useful in screening donated blood. Screening performed during this period may have removed as many as 1,000 potentially infectious units of blood from the U.S. blood supply. Continued use of this highly sensitive test procedure for HTLV-III antibody, in combination with voluntary avoidance of donation by members of high-risk groups, will virtually eliminate the risk of acquired immunodeficiency syndrome (AIDS) transmission by the nation's blood supply. Discussions and evaluations of other potentially appropriate and useful applications of this test are under way.

*Use of trade names is for identification only and does not imply endorsement by CDC or the U.S. Public Health Service.

1985 Aug 9;34:489-491

Isolation of Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus from Serum Proteins Given to Cancer Patients — Bahamas

Since 1977, a private clinic in Freeport, Grand Bahama Island, Bahamas, has given cancer patients vials of human serum proteins, prepared at the clinic, for a series of self-administered subcutaneous injections. These products, described by the clinic as immunoaugmentative therapy, are not approved for use in the United States and have been previously associated with the occurrence of cutaneous *Nocardia asteroides* infections (*1*). In addition, both hepatitis B surface antigen (HBsAg) and a variety of bacterial species have been reported in vials of serum proteins obtained from several patients who attended the clinic (*1,2*).

In May 1985, two laboratories in the State of Washington tested samples of the serum proteins that had been obtained from two patients who had attended the clinic. Eighteen vials were tested for human T-lymphotropic virus type III (HTLV-III) antibody by the Abbott enzyme immunoassay (EIA) method*; eight of the 18 were either repeatedly reactive or repeatedly borderline in the two laboratories' tests. All 18 specimen vials were also positive for HBsAg by the Abbott Auszyme EIA method.

In June, these specimens were sent from Washington to CDC for additional testing. Six of the 18 specimens were repeatedly reactive by the Abbott HTLV-III EIA. Testing of all 18 specimens by the Western blot method (*3*) yielded uninterpretable results. Aliquots of nine specimens, including the six that were reactive in the EIA, were placed in primary human lymphocyte culture in an attempt to isolate HTLV-III/lymphadenopathy-associated virus (LAV) (*4*). Of 18 specimens tested for HBsAg by radioimmunoassay (Ausria-II; Abbott Laboratories), 13 were positive and could be neutralized by antibody to HBsAg.

On July 2, authorities of the Bahamian Ministry of Health, accompanied by a staff member and a consultant to the Pan American Health Organization, visited the clinic. On July 17, the Ministry of Health ordered the clinic to close.

Subsequent to closure of the clinic, HTLV-III/LAV was isolated at CDC from one of the nine specimens that had been placed in lymphocyte culture. This finding was confirmed by isolation of HTLV-III/LAV from a second aliquot of this specimen. It was reactive in the HTLV-III EIA and also positive for HBsAg by radioimmunoassay. Reportedly, this specimen vial had not been used by the patient who received it at the clinic, and it had been kept frozen until it was obtained by the laboratories in Washington. The Washington laboratories do not maintain stocks of HTLV-III/LAV.

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Editorial Note: HTLV-III/LAV, the retrovirus that causes acquired immunodeficiency syndrome (AIDS), has been transmitted by transfusion of blood and blood products (*4,5*). The present report documents the presence of HTLV-III/LAV in a vial of serum protein prepared for injection by the clinic in the Bahamas. AIDS cases have not been reported as a consequence of receiving treatment at the clinic. In addition, the serum proteins used in this therapy may contain HBsAg. CDC has documented hepatitis B virus (HBV) infection in two clinic patients who had no other known risk for infection (*6*). Several other hepatitis B cases in clinic attendees are under investigation.

These findings suggest that patients who have received serum proteins for injection at this clinic may be at risk of acquiring HTLV-III/LAV and HBV infections. The magnitude of the risk is not known, but it must be assumed that all injectable materials presently in possession of attendees at the clinic are potentially contaminated. Patients who have received such therapy should consult their physicians. If it is decided to test the patient's serum for HTLV-III/LAV antibody or for evidence of HBV infection, such testing is available through state health department laboratories. If an initial test is negative, a testing of a follow-up sample, collected 6 months later, is recommended.

*Use of trade names is for identification only and does not imply endorsement by CDC or the U.S. Public Health Service.

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Results of a Gallup Poll on Acquired Immunodeficiency Syndrome — New York City, United States, 1985

According to results of two polls done for the New York City Department of Health by the Gallup Organization in June 1985, 95% of the U.S. population has heard of acquired immunodeficiency syndrome (AIDS) (Table 2). The surveys were done simultaneously—one, a sample of only New York City (N.Y.C.) residents, and the other, a national sample excluding New York City. To ascertain levels of knowledge about AIDS among adolescents, the sample was enlarged to include 304 youths 13-18 years of age.

In both the N.Y.C. and U.S. polls, respondents with incomes under $10,000 were less likely to be aware of AIDS. There were no major regional differences in AIDS awareness in the national sample, although respondents in the East and West exhibited slightly higher levels of knowledge than respondents in the South and Midwest.

When asked, "Who is most likely to have AIDS?" one-half to two-thirds of all respondents mentioned homosexual men. In answer to the same question, N.Y.C. respondents were two to three times more likely to mention intravenous (IV) drug abusers than were U.S. respondents. (IV drug abusers comprise 36% of N.Y.C. AIDS patients, compared with 26% of all other AIDS patients.) When given a set of statements to be answered "true" or "false," both N.Y.C. and U.S. respondents demonstrated a high level of knowledge about AIDS (Table 3).

Reported by P Clarke, MPH, DJ Sencer, MD, New York City Dept of Health; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, Office of Public Affairs, CDC.

Editorial Note: In the absence of an available vaccine or specific therapy for the treatment of AIDS, broad-scale prevention and control activities must revolve around risk reduction and programs that positively affect behavioral changes and reduce transmission of human T-lymphotropic virus type III infection. Information on adolescent awareness of AIDS is important for designing programs to prevent the adoption of risk-taking behavior, such as high-risk sexual practices or abuse of IV drugs. The results of the two polls suggest that communication methods have been successful, not only in alerting the U.S. population to the general problem of AIDS, but also in raising awareness levels concerning certain high-risk behaviors. The increased awareness levels are encouraging, but initiatives now need to be targeted with specific strategies developed at the community level that encourage and reinforce personal decisions by high-risk individuals to avoid behaviors associated with transmission of infection.

TABLE 2. Percentage of respondents aware of acquired immunodeficiency syndrome (AIDS)* — New York City, United States, June 1985

Respondents' characteristics	Responses (%)	
	New York City	United States
Age		
18-34 yrs.	91	96
35-49 yrs.	97	96
≥ 50 yrs.	95	92
Sex		
Male	95	94
Female	94	95
Race		
White	95	95
Black	95	93
Education		
Nonhigh-school graduate	90	85
High-school graduate	95	96
College graduate	98	99
Total no. respondents	**1,023**	**1,545**

*Awareness was determined by answering "yes" to the question: "Have you heard or read about a disease called AIDS?"

TABLE 3. Beliefs about acquired immunodeficiency syndrome (AIDS) — New York City, United States, June 1985

Statement	Responses (%)											
	United States			New York City			U.S. teen			N.Y.C. teen		
	T	F	U*	T	F	U	T	F	U	T	F	U
True												
Some people get AIDS when they receive blood transfusions.	92	3	5	90	6	4	86	11	3	80	16	4
Drug users who share needles have a higher risk of getting AIDS.	84	8	8	86	9	5	79	18	3	83	14	3
Most people with AIDS are homosexual men.	80	12	7	73	21	6	75	23	2	69	28	3
Some wives and girlfriends of drug users have gotten AIDS.	67	15	18	71	15	14	61	34	5	63	25	12
False												
You can get AIDS by shaking hands with someone who has it.	9	81	9	13	80	7	12	86	2	12	84	4
You can get AIDS by being in a crowded place with someone who has it.	9	81	9	15	78	7	14	84	2	14	81	5
Women cannot get AIDS.	6	88	6	8	87	5	8	90	2	12	86	2

*True; False; Unknown.

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Education and Foster Care of Children Infected with Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus

The information and recommendations contained in this document were developed and compiled by CDC in consultation with individuals appointed by their organizations to represent the Conference of State and Territorial Epidemiologists, the Association of State and Territorial Health Officers, the National Association of County Health Officers, the Division of Maternal and Child Health (Health Resources and Services Administration), the National Association for Elementary School Principals, the National Association of State School Nurse Consultants, the National Congress of Parents and Teachers, and the Children's Aid Society. The consultants also included the mother of a child with acquired immunodeficiency syndrome (AIDS), a legal advisor to a state education department, and several pediatricians who are experts in the field of pediatric AIDS. This document is made available to assist state and local health and education departments in developing guidelines for their particular situations and locations.

These recommendations apply to all children known to be infected with human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV). This includes children with AIDS as defined for reporting purposes (Table 1); children who are diagnosed by their physicians as having an illness due to infection with HTLV-III/LAV but who do not meet the case definition; and children who are asymptomatic but have virologic or serologic evidence of infection with HTLV-III/LAV. These recommendations do not apply to siblings of infected children unless they are also infected.

BACKGROUND

The Scope of the Problem. As of August 20, 1985, 183 of the 12,599 reported cases of AIDS in the United States were among children under 18 years of age. This number is expected to double in the next year. Children with AIDS have been reported from 23 states, the District of Columbia, and Puerto Rico, with 75% residing in New York, California, Florida, and New Jersey.

The 183 AIDS patients reported to CDC represent only the most severe form of HTLV-III/LAV infection, i.e., those children who develop opportunistic infections or malignancies (Table 1). As in adults with HTLV-III/LAV infection, many infected children may have milder illness or may be asymptomatic.

Legal Issues. Among the legal issues to be considered in forming guidelines for the education and foster care of HTLV-III/LAV-infected children are the civil rights aspects of public school attendance, the protections for handicapped children under 20 U.S.C. 1401 et seq. and 29 U.S.C. 794, the confidentiality of a student's school record under state laws and under 20 U.S.C. 1232g, and employee right-to-know statutes for public employees in some states.

TABLE 1. Provisional case definition for acquired immunodeficiency syndrome (AIDS) surveillance of children

For the limited purposes of epidemiologic surveillance, CDC defines a case of pediatric acquired immunodeficiency syndrome (AIDS) as a child who has had:

1. A reliably diagnosed disease at least moderately indicative of underlying cellular immunodeficiency, and
2. No known cause of underlying cellular immunodeficiency or any other reduced resistance reported to be associated with that disease.

The diseases accepted as sufficiently indicative of underlying cellular immunodeficiency are the same as those used in defining AIDS in adults. In the absence of these opportunistic diseases, a histologically confirmed diagnosis of chronic lymphoid interstitial pneumonitis will be considered indicative of AIDS unless test(s) for HTLV-III/LAV are negative. Congenital infections, e.g., toxoplasmosis or herpes simplex virus infection in the first month after birth or cytomegalovirus infection in the first 6 months after birth must be exluded.

Specific conditions that must be excluded in a child are:

1. Primary immunodeficiency diseases—severe combined immunodeficiency, DiGeorge syndrome, Wiskott-Aldrich syndrome, ataxia-telangiectasia, graft versus host disease, neutropenia, neutrophil function abnormality, agammaglobulinemia, or hypogammaglobulinemia with raised IgM.
2. Secondary immunodeficiency associated with immunosuppressive therapy, lymphoreticular malignancy, or starvation.

Confidentiality Issues. The diagnosis of AIDS or associated illnesses evokes much fear from others in contact with the patient and may evoke suspicion of life styles that may not be acceptable to some persons. Parents of HTLV-III/LAV-infected children should be aware of the potential for social isolation should the child's condition become known to others in the care or educational setting. School, day-care, and social service personnel and others involved in educating and caring for these children should be sensitive to the need for confidentiality and the right to privacy in these cases.

ASSESSMENT OF RISKS

Risk Factors for Acquiring HTLV-III/LAV Infection and Transmission. In adults and adolescents, HLTV-III/LAV is transmitted primarily through sexual contact (homosexual or heterosexual) and through parenteral exposure to infected blood or blood products. HTLV-III/LAV has been isolated from blood, semen, saliva, and tears but transmission has not been documented from saliva and tears. Adults at increased risk for acquiring HTLV-III/LAV include homosexual/bisexual men, intravenous drug abusers, persons transfused with contaminated blood or blood products, and sexual contacts of persons with HTLV-III/LAV infection or in groups at increased risk for infection.

The majority of infected children acquire the virus from their infected mothers in the perinatal period (*1-4*). In utero or intrapartum transmission are likely, and one child reported from Australia apparently acquired the virus postnatally, possibly from ingestion of breast milk (*5*). Children may also become infected through transfusion of blood or blood products that contain the virus. Seventy percent of the pediatric cases reported to CDC occurred among children whose parent had AIDS or was a member of a group at increased risk of acquiring HTLV-III/LAV infection; 20% of the cases occurred among children who had received blood or blood products; and for 10%, investigations are incomplete.

Risk of Transmission in the School, Day-Care or Foster-Care Setting. None of the identified cases of HTLV-III/LAV infection in the United States are known to have been transmitted in the school, day-care, or foster-care setting or through other casual person-to-person contact. Other than the sexual partners of HTLV-III/LAV-infected patients and infants born to infected mothers, none of the family members of the over 12,000 AIDS patients reported to CDC have been reported to have AIDS. Six studies of family members of patients with HTLV-III/LAV infection have failed to demonstrate HTLV-III/LAV transmission to adults who were not sexual contacts of the infected patients or to older children who were not likely at risk from perinatal transmission (*6-11*).

Based on current evidence, casual person-to-person contact as would occur among schoolchildren appears to pose no risk. However, studies of the risk of transmission through contact between younger children and neurologically handicapped children who lack control of their body secretions are very limited. Based on experience with other communicable diseases, a theoretical potential for transmission would be greatest among these children. It should be emphasized that any theoretical transmission would most likely involve exposure of open skin lesions or mucous membranes to blood and possibly other body fluids of an infected person.

Risks to the Child with HTLV-III/LAV Infection. HTLV-III/LAV infection may result in immunodeficiency. Such children may have a greater risk of encountering infectious agents in a school or day-care setting than at home. Foster homes with multiple children may also increase the risk. In addition, younger children and neurologically handicapped children who may display behaviors such as mouthing of toys would be expected to be at greater risk for acquiring infections. Immunodepressed children are also at greater risk of suffering severe complications from such infections as chickenpox, cytomegalovirus, tuberculosis, herpes simplex, and measles. Assessment of the risk to the immunodepressed child is best made by the child's physician who is aware of the child's immune status. The risk of acquiring some infections, such as chickenpox, may be reduced by prompt use of specific immune globulin following a known exposure.

RECOMMENDATIONS

1. Decisions regarding the type of educational and care setting for HTLV-III/LAV-infected children should be based on the behavior, neurologic development, and physical condition of the child and the expected type of interaction with others in that setting. These decisions are best made using the team approach including the child's physician, public health personnel, the child's parent or guardian, and personnel associated with the proposed care or educational setting. In each case, risks and benefits to both the infected child and to others in the setting should be weighed.

2. For most infected school-aged children, the benefits of an unrestricted setting would outweigh the risks of their acquiring potentially harmful infections in the setting and the apparent nonexistent risk of transmission of HTLV-III/LAV. These children should be allowed to attend school and after-school day-care and to be placed in a foster home in an unrestricted setting.
3. For the infected preschool-aged child and for some neurologically handicapped children who lack control of their body secretions or who display behavior, such as biting, and those children who have uncoverable, oozing lesions, a more restricted environment is advisable until more is known about transmission in these settings. Children infected with HTLV-III/LAV should be cared for and educated in settings that minimize exposure of other children to blood or body fluids.
4. Care involving exposure to the infected child's body fluids and excrement, such as feeding and diaper changing, should be performed by persons who are aware of the child's HTLV-III/LAV infection and the modes of possible transmission. In any setting involving an HTLV-III/LAV-infected person, good handwashing after exposure to blood and body fluids and before caring for another child should be observed, and gloves should be worn if open lesions are present on the caretaker's hands. Any open lesions on the infected person should also be covered.
5. Because other infections in addition to HTLV-III/LAV can be present in blood or body fluids, all schools and day-care facilities, regardless of whether children with HTLV-III/LAV infection are attending, should adopt routine procedures for handling blood or body fluids. Soiled surfaces should be promptly cleaned with disinfectants, such as household bleach (diluted 1 part bleach to 10 parts water). Disposable towels or tissues should be used whenever possible, and mops should be rinsed in the disinfectant. Those who are cleaning should avoid exposure of open skin lesions or mucous membranes to the blood or body fluids.
6. The hygienic practices of children with HTLV-III/LAV infection may improve as the child matures. Alternatively, the hygienic practices may deteriorate if the child's condition worsens. Evaluation to assess the need for a restricted environment should be performed regularly.
7. Physicians caring for children born to mothers with AIDS or at increased risk of acquiring HTLV-III/LAV infection should consider testing the children for evidence of HTLV-III/LAV infection for medical reasons. For example, vaccination of infected children with live virus vaccines, such as the measles-mumps-rubella vaccine (MMR), may be hazardous. These children also need to be followed closely for problems with growth and development and given prompt and aggressive therapy for infections and exposure to potentially lethal infections, such as varicella. In the event that an antiviral agent or other therapy for HTLV-III/LAV infection becomes available, these children should be considered for such therapy. Knowledge that a child is infected will allow parents and other caretakers to take precautions when exposed to the blood and body fluids of the child.
8. Adoption and foster-care agencies should consider adding HTLV-III/LAV screening to their routine medical evaluations of children at increased risk of infection before placement in the foster or adoptive home, since these parents must make decisions regarding the medical care of the child and must consider the possible social and psychological effects on their families.
9. Mandatory screening as a condition for school entry is not warranted based on available data.
10. Persons involved in the care and education of HTLV-III/LAV-infected children should respect the child's right to privacy, including maintaining confidential records. The number of personnel who are aware of the child's condition should be kept at a minimum needed to assure proper care of the child and to detect situations where the potential for transmission may increase (e.g., bleeding injury).
11. All educational and public health departments, regardless of whether HTLV-III/LAV-infected children are involved, are strongly encouraged to inform parents, children, and educators regarding HTLV-III/LAV and its transmission. Such education would greatly assist efforts to provide the best care and education for infected children while minimizing the risk of transmission to others.

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Recommendations for Preventing Possible Transmission of Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus from Tears

Human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the etiologic agent of acquired immunodeficiency syndrome (AIDS), has been found in various body fluids, including blood, semen, and saliva. Recently, scientists at the National Institutes of Health isolated the virus from the tears of an AIDS patient (*1*). The patient, a 33-year-old woman with a history of *Pneumocystis carinii* pneumonia and disseminated *Mycobacterium avium-intracellulare* infection, had no ocular complaints, and her eye examination was normal. Of the tear samples obtained from six other patients with AIDS or related conditions, three showed equivocal culture results, and three were culture-negative.

The following precautions are judged suitable to prevent spread of HTLV-III/LAV and other microbial pathogens that might be present in tears. They do not apply to the procedures used by individuals in caring for their own lenses, since the concern is the possible virus transmission between individuals.

1. Health-care professionals performing eye examinations or other procedures involving contact with tears should wash their hands immediately after a procedure and between patients. Handwashing alone should be sufficient, but when practical and convenient, disposable gloves may be worn. The use of gloves is advisable when there are cuts, scratches, or dermatologic lesions on the hands. Use of other protective measures, such as masks, goggles, or gowns, is *not* indicated.
2. Instruments that come into direct contact with external surfaces of the eye should be wiped clean and then disinfected by: (a) a 5- to 10-minute exposure to a fresh solution of 3% hydrogen peroxide; or (b) a fresh solution containing 5,000 parts per million (mg/L) free available chlorine—a 1/10 dilution of common household bleach (sodium hypochlorite); or (c) 70% ethanol; or (d) 70% isopropanol. The device should be thoroughly rinsed in tap water and dried before reuse.
3. Contact lenses used in trial fittings should be disinfected between each fitting by one of the following regimens:
   a. Disinfection of trial hard lenses with a commercially available hydrogen peroxide contact lens disinfecting system currently approved for soft contact lenses. (Other hydrogen peroxide preparations may contain preservatives that could discolor the lenses.) Alternatively, most trial hard lenses can be treated with the standard heat

disinfection regimen used for soft lenses (78-80 C [172-176 F] for 10 minutes). Practitioners should check with hard lens suppliers to ascertain which lenses can be safely heat-treated.

b. Rigid gas permeable (RGP) trial fitting lenses can be disinfected using the above hydrogen peroxide disinfection system. RGP lenses may warp if they are heat-disinfected.
c. Soft trial fitting lenses can be disinfected using the same hydrogen peroxide system. Some soft lenses have also been approved for heat disinfection.

Other than hydrogen peroxide, the chemical disinfectants used in standard contact lens solutions have not yet been tested for their activity against HTLV-III/LAV. Until other disinfectants are shown to be suitable for disinfecting HTLV-III/LAV, contact lenses used in the eyes of patients suspected or known to be infected with HTLV-III/LAV are most safely handled by hydrogen peroxide disinfection.

The above recommendations are based on data from studies conducted at the National Institutes of Health and CDC on disinfection/inactivation of HTLV-III/LAV virus (*2-4*). Additional information regarding general hospital and laboratory precautions have been previously published (*5-9*).

Reported by the U.S. Food and Drug Administration; National Institutes of Health; Centers for Disease Control.

Editorial Note: All secretions and excretions of an infected person may contain lymphocytes, host cells for HTLV-III/LAV; therefore, thorough study of these fluids might be expected to sometimes yield this virus. Despite positive cultures from a variety of body fluids of infected persons, however, spread from infected persons to household contacts who have no other identifiable risks for infection has not been documented. Furthermore, there is no evidence to date that HTLV-III/LAV has been transmitted through contact with the tears of infected individuals or through medical instruments used to examine AIDS patients.

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1985 Sept 6;34:547—548

Update: Revised Public Health Service Definition of Persons Who Should Refrain from Donating Blood and Plasma — United States

Since March 1985, blood- and plasma-collection centers in the United States have used a two-phase screening procedure to decrease transmission of human T-lymphotropic virus type III (HTLV-III) through transfusion of blood or blood products. First, potential donors are informed that if they have a risk factor for AIDS they should not donate (*1*); second, the blood or plasma of persons accepted as donors is screened for antibody to HTLV-III (*2,3*). The low frequency of enzyme immunoassay (EIA)-positive tests among blood donors (*3,4*) shows that the deferral criteria have been effective. Interviews with the small number of blood donors found infected with HTLV-III, however, have shown that most have a risk factor for HTLV-III infection; homosexual contact was the most common risk factor identified (*5*). To further reduce the risk of HTLV-III infection from blood and plasma, the U.S. Food and Drug Adminis-

tration (FDA) has reworded the donor-deferral recommendations to state that any man who has had sex with another man since 1977 should not donate blood or plasma. This applies even to men who may have had only a single contact and who do not consider themselves homosexual or bisexual.

Reported by Center for Drugs and Biologics, US Food and Drug Administration; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Recommendations to decrease transmission of HTLV-III through transfusion of blood or blood products were disseminated in March 1983 (*1*) and were rapidly adopted by blood and plasma centers throughout the United States. These recommendations centered on informing all blood or plasma donors that people with a risk factor for AIDS should not donate and asked for voluntary compliance. In March 1985, the second phase of screening blood and plasma was instituted with licensure of test kits to detect antibody to HTLV-III (*2,3*). The test kits are both highly sensitive and specific (*4*), but donors with a risk factor for HTLV-III infection continue to be asked not to donate blood, since the two-phase screening procedure provides additional safety. This revised wording of the deferral recommendations is intended to inform persons who may have been infected with HTLV-III through occasional or intermittent homosexual activity that they should not donate blood or plasma, even if they do not believe they are at risk of having been infected through their contacts.

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Oral Viral Lesion (Hairy Leukoplakia) Associated with Acquired Immunodeficiency Syndrome

From October 1981 to June 1985, 13 (11%) of 123 patients with hairy leukoplakia (HL) seen in San Francisco, California, were additionally diagnosed as having acquired immunodeficiency syndrome (AIDS). Eighty (73%) of the 110 patients who did not have AIDS at the time of HL diagnosis were followed (*1*). Twenty of these developed AIDS within 1-33 months (mean 7.5 months) of HL diagnosis. Seventy-nine serum specimens from the 123 patients with HL were tested for antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) by indirect immunofluorescence (*2*). Of these, 78 (99%) were positive. The one negative result was also negative by Western blot test. All cases met the CDC case definition for AIDS.

Oral viral "hairy" leukoplakia of the tongue appears as raised white areas of thickening on the tongue, usually on the lateral border. The lesions may not respond to traditional antifungal therapy and appear to have unusual virologic features. *Candida* has been reported on the surface of the HL lesions. A number of viruses, including papilloma, herpes, and Epstein-Barr, have been identified by electron microscopy in biopsies obtained from the HL lesions. HL was first identified in San Francisco in 1981. The lesion has also been reported in patients examined in Los Angeles, California; Baltimore, Maryland; Ann Arbor, Michigan; Paris, France; Copenhagen, Denmark; and London, England.

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Editorial Note: HL may be of diagnostic value as an early indicator of HTLV-III/LAV infections, especially when observed in combination with other clinical findings. Approximately 95% of patients with AIDS and AIDS-related complex are reported to have cervical lymphadenopathy and other head and neck manifestations of disease, which may be detected by dentists or others undertaking oral or facial examination (*3*).

Health-care providers, including dental personnel, are in a unique position to identify clinical oral symptoms and their potential association with AIDS. Kaposi's sarcoma (KS), candidiasis, recurrent herpetic infections, and papillomas are oral manifestations that have been associated with AIDS. Unresolved candidiasis may be one of the earliest signs of AIDS in persons in groups at risk of acquiring AIDS. Oral KS is virtually pathognomonic of AIDS in males aged 25-44 years. Squamous cell carcinomas, non-Hodgkins lymphomas, and malignant melanomas have also been reported to occur in the oral cavity in association with AIDS.

While careful histories and physical examinations alone will not identify persons with AIDS or related symptoms, oral findings, including this newly reported oral lesion, are important diagnostic tools for health-care providers in early identification and treatment of AIDS.

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1985 Sept 20;34:561—563

Heterosexual Transmission of Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus

Acquired immunodeficiency syndrome (AIDS) is caused by a virus that is known to be transmitted through sexual contact and parenteral exposure to blood or blood products and from mother to child during the perinatal period.

In the United States, sexual contact is believed to be the only risk factor for 8,374 (64%) of the 13,061 AIDS cases among adults reported to CDC as of September 16, 1985. These sexual-contact cases include 8,241 homosexual or bisexual men with no other known risk factors for infection and 133 heterosexual men and women.

The heterosexual-contact cases are among persons who denied belonging to known AIDS risk groups, but reported sexual contact with a risk-group member or an AIDS patient of the opposite sex. The proportion of AIDS patients placed in this category has not changed significantly over time ($p > 0.15$). The 133 heterosexual-contact cases include 118 women and 15 men, the majority of whom said they had sexual contact with intravenous (IV) drug abusers.

No risk factors have been identified for HTLV-III/LAV infection in 829 of the total AIDS cases reported to CDC. Of these 829 patients, 344 were born in developing countries where AIDS is known to exist. The remaining 485 cases constitute a proportion of AIDS patients that has not changed significantly over time ($p > 0.15$). Of these 485 patients with no identified risk, 99 were available for in-depth interviews. Twenty-three (34%) of the 68 men gave histories of sexual contact with female prostitutes. One (3%) of the 31 women gave a history of prostitution.

Serologic evidence of HTLV-III/LAV infection in female prostitutes has been shown in preliminary studies from several American cities. Of 92 prostitutes tested in Seattle, five (5%) had HTLV-III antibody detected by the enzyme immunoassay (EIA) tests of two manufacturers. In Miami, Florida, 10 (40%) of 25 prostitutes attending an AIDS screening clinic had HTLV-III antibody detected by both EIA and Western blot methods. Eight of the 10 seropositive women reported previous IV drug abuse.

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Editorial Note: Transmission of HTLV-III/LAV from heterosexual men to their female sexual partners has been well established in studies from the United States and elsewhere. Several published reports from the United States describe the occurrence of AIDS in heterosexual couples, where only the male partner had a known AIDS risk factor (*1-3*). A study in Rwanda and Belgium described AIDS or related conditions in 42 African women, including 10 prostitutes, who denied IV drug abuse (*4*).

Studies of AIDS patients from several developing countries also indicate that female-to-male sexual transmission of HTLV-III/LAV infection occurs in those settings and emphasize the role of female prostitutes in this transmission. In Zaire, the ratio of male-to-female AIDS cases is 1.1:1 (*5*). A case-control study of heterosexual African men with AIDS or related conditions in Rwanda and Belgium showed a significant association of HTLV-III/LAV infection with a history of contact with prostitutes and with an increased number of female partners per year (*4*). A case-control study of Haitian men with AIDS in Miami and New York City showed a significant association of AIDS with a history of prostitute contact and with a history of sexually transmitted diseases, suggesting that sexual contact may be a major method of transmission in these heterosexual men (*6*).

For persons born in the United States, female-to-male sexual transmission of HTLV-III/LAV has been less evident than male-to-female sexual transmission. The reasons for reported differences in the epidemiologic pattern of HTLV-III/LAV infections in the United States and certain developing countries are not clear. However, there are at least two possible explanations for the paucity of reported male "heterosexual contact" AIDS patients in the United States. First, female-to-male transmission of HTLV-III/LAV may be less efficient than male-to-female transmission, as has been reported for gonococcal infections (*7,8*). Second, the proportion of women among infected persons is relatively small. Of the 2,665 reported heterosexual AIDS patients with known risk factors in the United States, only 647 (24%) are women. The inclusion of 1,427 AIDS cases among bisexual men would further decrease the proportion of women among potential transmitters of infection. If the distribution of HTLV-III/LAV infected persons in the population is similar to the distribution of AIDS patients, infected heterosexual men would outnumber infected women by a ratio of 5:1.

While additional evidence for female-to-male transmission of HTLV-III/LAV in the United States is being sought, it would seem prudent to assume that such transmission occurs. In all other sexually transmitted infections, transmission is bidirectional, and HTLV/III/LAV appears to be spread bidirectionally in other populations. HTLV-III/LAV has been isolated from semen (*9,10*) and, presumably, would be present in the menstrual blood and the lymphocytes found in cervical and vaginal secretions of infected women. Attempts to isolate the virus from cervical and vaginal secretions are in progress.

All sexually active persons should realize that their risks of acquiring infection are greatly increased by having sexual intercourse with members of known AIDS risk groups or with persons who are the sexual contacts of risk-group members. Sexually active persons should also recognize that, as with other sexually transmitted diseases, the greater the number of sexual partners, the greater the risk of possible HTLV-III/LAV infection. Consistent use of condoms should assist in preventing infection with HTLV-III/LAV, but their efficacy in reducing transmission has not yet been proven.

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1985 Sept 27;34:573—575

Update: Acquired Immunodeficiency Syndrome in the San Francisco Cohort Study, 1978-1985

Between 1978 and 1980, a cohort of approximately 6,875 homosexual and bisexual men who had sought evaluation for sexually transmitted diseases at the San Francisco (California) City Clinic was enrolled in a series of studies of the prevalence, incidence, and prevention of hepatitis B virus infections (*1,2*). In 1981, six of the first 10 men reported with acquired immunodeficiency syndrome (AIDS) in San Francisco were discovered to be members of the City Clinic cohort. Subsequently, the Department of Public Health and CDC began a study of cohort members for AIDS and for infections with human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the cause of AIDS.

In a representative sample of cohort members, prevalence of antibody to HTLV-III/LAV, measured by an enzyme immunosorbent assay (EIA), increased from 4.5% in 1978 to 67.3% in 1984 (*3*). From January through August 1985, HTLV-III/LAV antibody prevalence further increased to 73.1% (Figure 1). The number of AIDS cases reported among cohort members increased from 166 in 1984 to 262 in August 1985 (Figure 2).

Thirty-one members of the sample who consented to have their earliest specimens tested had antibody to HTLV-III/LAV at the time they enrolled in studies between 1978-1980. By December 1984, two (6.4%) (95% confidence bounds 0.8%-21.4%) had developed AIDS, and eight (25.8%) had AIDS-related conditions, as defined elsewhere (*3*). Symptomatic infections with HTLV-III/LAV thus had occurred in 10 (32.2%) (95% confidence bounds 16.7%-51.4%) of the 31 men after a follow-up period averaging 61 months. No further cases of AIDS have been reported in the 29 men through the first 8 months of 1985.

Sixty members of the cohort who were seronegative in 1984 were tested again in 1985, an average of 14 months (range 9-18) after their last specimens were collected; nine (15.0%) were found to have developed antibodies to HTLV-III/LAV. Five of the nine had reduced their numbers of sexual partners since their last visit; two had not changed; and two had increased their numbers slightly. Each man who seroconverted had engaged in sexual activities that resulted in the exchange of semen and other body fluids. Two seroconverters who reported sexual exposures with only one steady partner since their last negative test had engaged in receptive anal intercourse with ejaculation by their respective partners.

Men who remained seronegative were not shown to differ significantly in sexual practices from those who seroconverted, but the number of seroconverters available for comparison is small.

Reported by D Echenberg, MD, G Rutherford, MD, P O'Malley, T Bodecker, San Francisco Dept of Public Health; AIDS Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: The cumulative incidence of AIDS in City Clinic cohort members is now 3,825 per 100,000, the highest of any reported population (*4,5*). Almost three-quarters of cohort members now have serologic evidence of HTLV-III/LAV infections. The long-term prognoses for these men is unknown. The fact that two-thirds of men infected for over 5 years have not developed AIDS or AIDS-related illness is an encouraging indication that infection with this virus is not necessarily followed by rapid development of symptoms and death.

Studies from New York City, San Francisco, and elsewhere suggest that many gay men have changed their sexual lifestyles (*5*). Between 1980 and 1983, rates of rectal and pharyngeal gonorrhea in men in Manhattan decreased 59% (*6*). Surveys of self-reported behavior of gay men in San Francisco have shown decreases in both the average number of sexual partners and sexual practices known to transmit HTLV-III/LAV infection (*7,8*). However, as the prevalence of HTLV-III/LAV infection in a population increases, substantial changes in both the numbers of sexual partners and types of sexual practices will be necessary to reduce the risk that susceptible gay men may become infected.

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FIGURE 1. Human T-lymphotropic virus type III/lymphadenopathy-associated virus infections in City Clinic cohort, by year specimen collected — San Francisco, California, 1978-1985

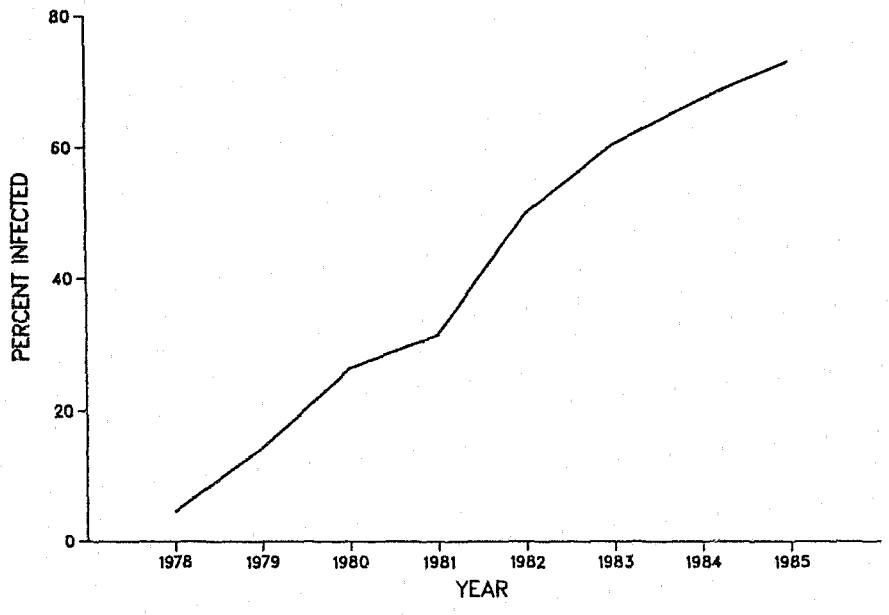
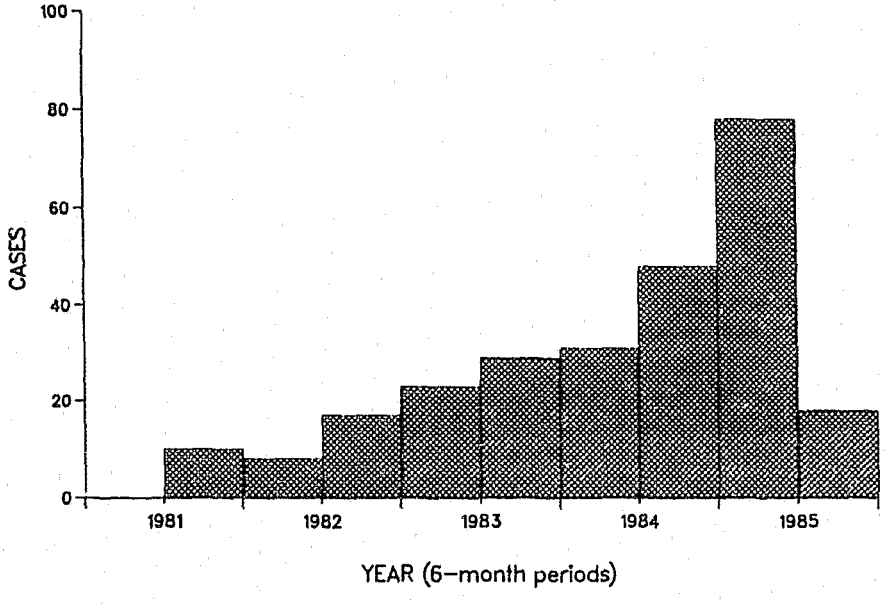


FIGURE 2. Acquired immunodeficiency syndrome among members of City Clinic cohort, by 6-month period of report — San Francisco, California, 1981-1985*



*Incomplete data for second half of 1985.

1985 Sept 27;34:575–578

Update: Evaluation of Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus Infection in Health-Care Personnel — United States

The occurrence of the acquired immunodeficiency syndrome (AIDS) in intravenous (IV) drug users, blood transfusion recipients, and persons with hemophilia indicates that parenteral transmission of human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) occurs via infectious blood or blood products (*1*). Currently available practices have nearly eliminated these risks for transfusion recipients and persons with hemophilia (*2,3*). Because health-care personnel may be inadvertently exposed to the blood of AIDS patients, several studies have been conducted to determine the prevalence of HTLV-III/LAV antibodies in health-care personnel who have cared for these patients (*4-10*). Combining published results with data reported to CDC shows that, to date, 1,758 health-care workers participating in such studies have been tested for antibodies to HTLV-III. Twenty-six (1.5%) were seropositive, and all but three of these persons belonged to groups recognized to be at increased risk for AIDS. Epidemiologic information is not available for one of these three health-care workers who was tested anonymously. Because of the high level of interest in these studies and in the potential for occupational transmission of HTLV-III/LAV through parenteral and mucosal routes, the case histories for these two health-care workers are reported below.

Patient 1. A female health-care worker was tested for serum antibodies to HTLV-III in November 1984 as part of a study of hospital personnel. She had sustained accidental needlestick injuries in November 1983 and March 1984 (12 months and 8 months before) while drawing blood from patients with AIDS . At the time of enrollment in the study, serum antibodies to HTLV-III were detected by enzyme immunoassay (EIA) and Western blot techniques. No serum obtained before or within 12 months after the needlesticks was available for testing. She was in good health until June 1984, when she developed mild but persistent lymphadenopathy, most marked in the axilla. Beginning in August 1984, she experienced intermittent diarrhea. When interviewed by a physician, the patient denied IV drug use or blood transfusions and reported being heterosexually monogamous since 1981. Her long-term sex partner denied homosexual activity, IV drug use, or other known risk factors when interviewed separately. Although repeatedly antibody negative by EIA and Western blot methods over an 8-month period, HTLV-III was recovered from his peripheral lymphocytes in April 1985 but could not be recovered from lymphocytes obtained several months later.

Patient 2. A male laboratory worker was discovered to be lymphopenic after he volunteered to be tested in conjunction with a study in April 1985. At that time, he had serum antibodies to HTLV-III by EIA and Western blot methods. No previous blood samples were available for testing. As part of his job, he processed platelets pooled from individual donors for transfusion. In December 1983, he sustained an accidental cut on the hand while processing blood from a patient with leukemia. He also sustained an accidental needlestick injury in August 1984 while processing a unit of pooled platelets. Both incidents resulted in parenteral exposure to blood from other persons. It is not known whether any of the individual platelet donors or the patient with leukemia had HTLV-III infection. The health-care worker is asymptomatic, although he had transient cervical lymphadenopathy during early 1985. HTLV-III was recovered from his peripheral blood lymphocytes in September 1985. During three independent interviews, he denied any homosexual activity, IV drug use, foreign travel, or blood transfusions. He described himself as heterosexual and was not aware that any of his approximately 12 lifetime sex partners had AIDS or were at increased risk for HTLV-III/LAV infection.

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Editorial Note: These two health-care workers probably represent occupational transmission of HTLV-III/LAV due to parenteral exposure, although in neither was a preexposure serum sample available to date the onset of infection. Although not reported during investigations of these two cases, it is difficult to totally assure that additional risk factors for AIDS

were absent. For purposes of epidemiologic surveillance, a case of occupationally acquired HTLV-III/LAV infection should ideally include all the following features: a worker with no identifiable risk factors for AIDS whose serum, obtained within several days of the date of a possible occupational exposure, is negative for antibody to HTLV-III/LAV but whose follow-up serum, in absence of interim exposure to other risk factors, is positive for antibody to HTLV-III/LAV. The two cases reported here do not fully meet these ideal criteria. However, there is one published report from England of a nurse who developed HTLV-III/LAV antibody following an accidental needlestick injury (*11*). Her serum was negative for antibody to HTLV-III/LAV at the time of exposure. This nurse reportedly had none of the recognized risk factors for AIDS and was asymptomatic at the time the report was published.

The two cases reported here represent the only known evidence of probable occupational transmission of HTLV-III/LAV in the United States. This confirms that the risk of transmission of HTLV-III/LAV infection to health-care workers from patients is extremely low (*4-10*). HTLV-III/LAV infections appear to be much less transmissible through needlesticks than hepatitis B; nearly 26% of persons comparably exposed to a hepatitis B surface antigen-positive patient develop infection (*12*). Nonetheless, personnel should follow recommendations designed to minimize the risk of exposure to parenteral or mucosal (e.g., blood spatter on conjunctiva) contact with potentially infectious materials from patients with AIDS or suspected AIDS (*13,14*).

Epidemiologic studies of needlestick injuries in hospital personnel indicate that over 40% of the accidents are potentially preventable if recommended precautions are followed when handling used needles or other sharp objects (*6*). Educational programs to familiarize health-care workers with the basic practices in infection control are essential to the prevention of AIDS and other infections. Health-care workers and others should become familiar with and follow recommended precautions when handling specimens, secretions, and excretions from persons known to be infected with HTLV-III/LAV. Health-care personnel whose serum is positive for HTLV-III/LAV antibody should follow the precautions that have been published for health-care workers with AIDS (*15*).

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Update: Acquired Immunodeficiency Syndrome — Europe

As of June 30, 1985, 1,226 cases of acquired immunodeficiency syndrome (AIDS) have been reported to the World Health Organization (WHO) European Collaborating Centre on AIDS (Table 1). Two hundred eighty-five new cases were reported by 17 countries that were corresponding with the Centre by March 31, 1985 (*1*). The new cases represent an average increase of 22 cases per week.

The greatest increases in numbers of cases were observed in: France—85 new cases (six to seven per week); Federal Republic of Germany—58 (four to five per week), and the United Kingdom—36 (two to three per week). In each of four countries (Belgium, Netherlands, Spain, and Switzerland), an increase of one case per week was noted. In Italy, the number of reported cases has more than doubled since March 1985 (30 new cases) because of better contact between clinicians and the national reporting center. For the other 10 countries, zero to seven new cases were reported between March and June.

AIDS cases per million population were calculated using 1985 population estimates (Institut National d'Etudes Démographiques, Paris). The highest rates were noted in: Switzerland—9.7; Denmark—9.4; and France—7.0. These rates are low compared to the U.S. rate of 48.4 (*2*). The rate reported from Belgium must be interpreted in a unique context, as 74% of cases in Belgium originate from Africa.

The number of cases reported by the 10 countries that collaborated with the Centre in July 1984 (Denmark, Federal Republic of Germany, France, Greece, Italy, Netherlands, Spain, Sweden, Switzerland, and United Kingdom) increased from 421 cases as of July 15, 1984 (*3*) to 1,090 cases on July 30, 1985. This is an increase of 160% in 1 year. The number of cases reported from these 10 countries has doubled in the last 8 months.

A total of 626 deaths were reported for 1,226 cases (case-fatality rate: 51%) (Table 2). Seven hundred ninety-five patients (65%) presented with one or more opportunistic infections; 245 (20%) had Kaposi's sarcoma (KS) alone; and 171 (14%) had opportunistic infections with KS. The category, "Other" (15 cases), includes four cases of progressive multifocal leukoencephalopathy (France—three; Denmark—one), four cases of cerebral lymphoma (United Kingdom—two; France—one, and Switzerland—one), one case of Burkitt's lymphoma of the brain; five cases of B-cell non-Hodgkin's lymphoma (Federal Republic of Germany—three; Netherlands—two), and one unknown (Sweden).

TABLE 1. Reported acquired immunodeficiency syndrome cases and estimated rates per million population — 18 European countries, July 1, 1984-June 30, 1985

Country	July 1984	Dec. 1984	March 1985	June 1985	Rates*
Austria	-	13	13	18	2.4
Belgium	-	65	81	99	10.0
Czechoslovakia	-	0	0	0	0.0
Denmark	28	34	41	48	9.4
Federal Republic of Germany	79	135	162	220	3.6
Finland	-	5	5	6	1.2
France	180	260	307	392	7.0
Greece	2	6	7	9	0.9
Iceland	-	0	0	0	0.0
Italy	8	14	22	52	0.9
Luxembourg	-	-	-	1	2.5
Netherlands	21	42	52	66	4.6
Norway	-	5	8	11	2.6
Poland	-	0	0	0	0.0
Spain	14	18	29	38	1.0
Sweden	7	16	22	27	3.3
Switzerland	28	41	51	63	9.7
United Kingdom	54	108	140	176	3.1
Total	**421**	**762**	**940**	**1,226**	

*Per million population based on 1985 populations.

Males accounted for 91% of the cases (Table 3). The sex ratio was 11:1. Forty-two percent of cases occurred in the 30- to 39-year age group. Twenty-nine pediatric cases (children under 15 years old) have been reported in 10 European countries. Eighteen children either had parents with AIDS or parents who were in a group at high risk for AIDS; for eight pediatric patients (four with hemophilia and four with blood transfusions), transmission was due to contaminated blood or blood products. In four of the pediatric patients, no risk factor was reported.

Total cases were distributed geographically and by risk group as follows (Table 4):

TABLE 2. Acquired immunodeficiency syndrome cases and number of deaths, by disease category — 18 European countries,* through June 30, 1985

Disease category	Cases	(%)	Deaths	(%)
Opportunistic infection	795	(65)	444	(56)
Kaposi's sarcoma	245	(20)	64	(26)
Opportunistic infection and Kaposi's sarcoma	171	(14)	108	(63)
Other	15	(1)	10	(67)
Total	**1,226**	**(100)**	**626**	**(51)**

*Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and United Kingdom.

TABLE 3. Acquired immunodeficiency syndrome cases, by age group and sex — 18 European countries, through June 30, 1985

Age group	Males	Females	Unknown	Sex ratio	Total No.	(%)
0-11 mos.	6	6		1:1	12	(1.0)
1-4 yrs.	6	5		1:1	11	(1.0)
5-9 yrs.	2	1	1	2:1	4	(0.3)
10-14 yrs.	3				3	(0.2)
15-19 yrs.	5				5	(0.4)
20-29 yrs.	207	45		5:1	252	(20.6)
30-39 yrs.	490	28		18:1	518	(42.3)
40-49 yrs.	295	11		27:1	306	(25.0)
50-59 yrs.	83	8		10:1	91	(7.4)
≥ 60 yrs.	12	1		12:1	13	(1.1)
Unknown	11				11	(1.0)
Total	**1,120**	**105**	**1**	**11:1**	**1,226**	**(100.0)**

TABLE 4. Acquired immunodeficiency syndrome cases, by patient risk group and geographic origin — 18 European countries, through June 30, 1985

Patient risk group	Origin: Europe	Caribbean Islands	Africa	Other	Total No.	(%)
1. Male homosexual or bisexual	809	4	10	30	853	(70)
2. I.V. drug abuser	48	-	-	-	48	(4)
3. Hemophilia patient	38	-	-	1	39	(3)
4. Transfusion recipient (without other risk factors)	20	-	5	-	25	(2)
5. 1- and 2-associated	15	-	1	2	18	(1)
6. No known risk factor						
males	49	22	76	2	149	(12)
females	25	9	36	-	70	(6)
7. Unknown	7	1	13	3	24	(2)
Total	**1,011**	**(82%)**	**36**	**(3%)**	**141**	**(12%)**	**38**	**(3%)**	**1,226**	**(100)**

Europeans*: 1,011 cases (82% of total). Nine hundred seventy-six (97%) patients were living in Europe before onset of the first symptoms; 35 (3%) were living in non-European countries: Zaire—11; United States—10; Haiti—two; and one each in Bermuda, Burundi, Congo, Gabon, Ghana, Malaysia, Nicaragua, South Africa, Togo, and Venezuela; the country of residence was not specified for two of the 35 patients.

Caribbeans: 36 (3%). Thirty-four patients were living in Europe before the onset of the first symptoms: 30 Haitians were diagnosed in France; and one, in Belgium; one Dominican and one Jamaican were living in the United Kingdom; one patient of unspecified origin was living in Switzerland. Two Haitian patients diagnosed in France were living in Haiti.

Africans: 141 (12%). These persons were diagnosed in seven European countries and originated from 21 African countries (62% from Zaire and 10% from the Congo). Among the remaining 19 countries, the number of cases varied from one to five. One patient was of unknown national origin. Seventy-five patients (53%) were living in Europe before onset of the first symptoms. Sixty-one resided in Africa, and one, in the United States. Two patients from Zaire and one each from Burundi and Rwanda were living in other parts of the world.

Other origins: 38 cases (3%). Most of these patients originated from the American continents: United States—19; Canada—one; Argentina—three; Brazil—three; and one each from Chili, Nicaragua, Peru, and Uruguay. One patient each originated from Australia, Lebanon, Pakistan, Thailand, and Turkey; the origins of three were unknown. Thirteen of these patients were not living in Europe before the onset of the first symptoms (United States—10; Africa—one; unknown—two).

Among the 1,011 European patients, 809 (80%) were homosexual or bisexual (Table 4). Forty-eight (5%) patients were IV drug abusers, and 15 (1%), both homosexual and drug abusers. These 63 cases were diagnosed in: Italy—19; Spain—16, Federal Republic of Germany—12; France—eight; Switzerland—three; Austria—two; United Kingdom—two; and Sweden—one. Thirty-eight (4%) of the reported patients had hemophilia and were diagnosed in: Federal Republic of Germany—16; Spain—eight; United Kingdom—six; France—three; and one each in Austria, Greece, Italy, Norway, and Sweden. One German hemophilia patient was reported as being homosexual and a drug abuser. For 20 patients (2%), the only risk factor found was blood transfusion. These cases were diagnosed in: France—12; Belgium and Netherlands—three each; and Federal Republic of Germany and United Kingdom—one each. Among these 20 cases, five had received blood transfusions outside Europe: one diagnosed in the Netherlands had undergone heart surgery in the United States; one diagnosed in France had received blood transfusions in Haiti and Martinique; and two diagnosed in Belgium had received transfusions in Zaire. One child diagnosed in the United Kingdom had received a blood transfusion in the United States. For 74 patients (7%), no risk factor was found (sex ratio 2:1). Risk factor information was not obtained for seven patients.

Among the 36 Caribbean patients, four were homosexual, and no risk factors were identified for 31 (sex ratio 3:1). Risk factor information was not obtained in one case.

Among the 141 Africans, 10 were homosexuals; five had received blood transfusions; and one was both homosexual and an IV drug abuser. No risk factors were identified for 112 (sex ratio 2:1); and for 13, information was not obtained.

Among the 38 patients of other origins, 30 were homosexual; two, both homosexual and IV drug abusers (one Canadian diagnosed in the United Kingdom and one in Sweden); two did not present risk factors. Information was not obtained in three cases.

It is not possible to compare precisely the situations in the various European countries because of differences that may exist in the methods of data collection at national levels of surveillance. Furthermore, in countries where AIDS is still rare, distribution of case patients by risk group may be modified as the number of cases increases. However, by examining current risk group distributions, the following observations can be made:

Male homosexuals. AIDS patients belonging to this risk group account for 60%-100% of the total number of cases in 11 of 15 countries. In four other countries (Belgium, Greece, Italy, Spain), male homosexuals account for fewer than 50% of cases.

Patients not belonging to any identified risk group. Among European countries this group contributes the second largest number of cases. This situation is accentuated in four countries (Belgium, France, Greece, and Switzerland), since a high proportion of patients origi-

*The word European refers to patients originating from one of the countries belonging to the WHO European region.

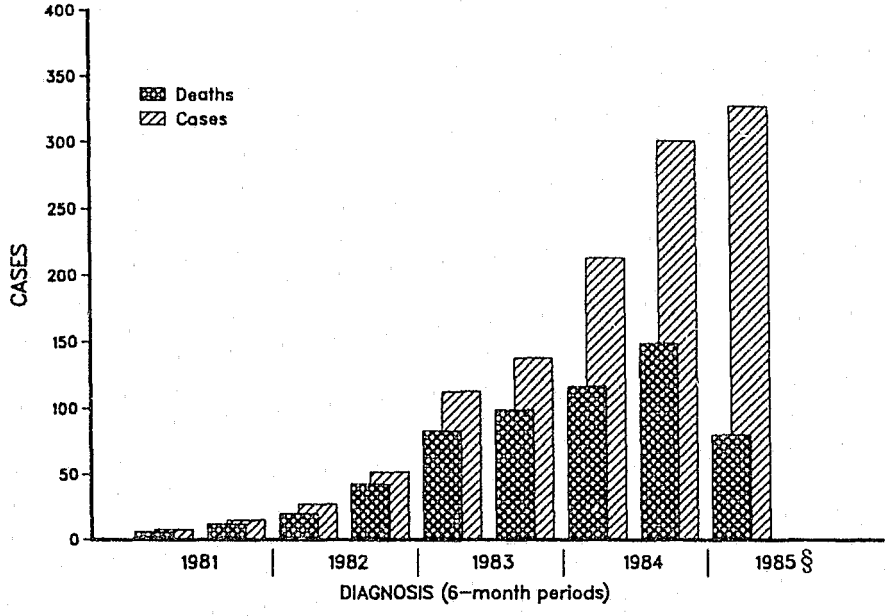
nate from regions where AIDS has developed outside the principal risk groups (in Belgium, 74% of the patients originate from Equatorial Africa; in France, 13% originate from the same region, and 8% from Haiti; in Switzerland 13% originate from Equatorial Africa).

IV drug abusers. Of the nine countries reporting cases among IV drug abusers, two have a high proportion in this risk group: Spain—16 (42%) of 38 cases; Italy—19 (37%) of 52. The spread of AIDS in Europe has been particularly marked in this group. In July 1984, only Spain (three cases) and Federal Republic of Germany (two cases) had reported cases among IV drug abusers.

Cases related to transfusion of blood and blood products. Nine countries have reported AIDS among hemophilia patients, and five have reported cases among blood transfusion recipients. Although the first known cases among hemophilia patients in Europe might be related to the importation of factor VIII concentrate from the United States, the development of cases among transfusion recipients shows that AIDS transmission from European national blood production networks has become a public health problem. Most European countries have or shortly will set up systemic screening programs in blood donor centers.

The number of cases diagnosed between January and June 1985 must be considered as provisional because of the time required for reports to reach national surveillance centers. By June 30, 1985, 55% of patients diagnosed between January and June 1984 had died (Figure 3).

FIGURE 3. Acquired immunodeficiency syndrome cases and number of deaths, by 6-month period of diagnosis — 18 European countries,* January 1, 1981-June 30, 1985†



*Austria, Belgium, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, and United Kingdom.
†Before 1981, 20 cases, including 12 deaths, were reported.
§January-June 1985. An additional 12 cases (four deaths) with unknown dates of diagnosis were also reported.

Surveillance of AIDS in Europe began in 1982; data obtained before 1982 cannot be included in the present surveillance data because of an unknown proportion of patients lost to follow-up.

Preliminary incidence rates for AIDS in the first 6 months of 1985 ranged from 0.3 cases per million population (Spain, United Kingdom) to about three cases per million (Denmark, Switzerland) (Figure 4). Incidence rates calculated from December 1984 data (*4*) showed that 6-monthly incidence rates increased constantly in only six countries: Denmark, France, Federal Republic of Germany, Netherlands, Switzerland, and United Kingdom. Six months later, the situation changed distinctly—incidence rates increased in all countries that have reported cases.

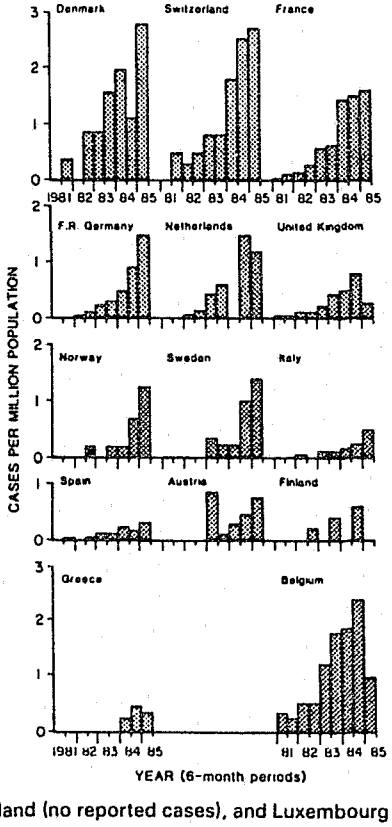
The spread of AIDS in Europe has accelerated since the beginning of 1985. During 1984, an average of about 10 cases were diagnosed each week in Europe. The average number of new cases per week for the 3-month periods ending December 31, 1984, March 31, 1985, and June 30, 1985, were 11, 14, and 22 new cases, respectively. Although 65% of the cases have been reported in three countries (France, Federal Republic of Germany, and United Kingdom), an increase has been noted in most of the countries participating in the surveillance of AIDS. In the three countries, distribution by risk group is similar to that observed in the United States. All identified risk groups are represented; male homosexuals are the most affected. In other countries, distribution varies, and only certain groups are currently affected. Three situations stand out: (1) In northern Europe (Denmark, Finland, Netherlands, Norway, and Sweden), most cases occur among male homosexuals; (2) In certain countries in southern Europe (Italy, Spain), the majority of cases occur among persons with no identifiable risk factor, but IV drug abusers seem to be considerably more affected than in the other countries; and (3) In Belgium, most of the cases occur among patients from central Africa.

Risk group distributions may be modified if the epidemic spreads into countries that have reported relatively few cases. Analysis of European surveillance data will continue to monitor risk-group distribution.

Editorial Note: As of June 30, 1985, 18 countries were participating in the surveillance of AIDS in Europe by reporting their respective data to the Centre. Since the previous report (March 31, 1985), Luxembourg has collaborated with the Centre.

The Centre uses the CDC case definition. One source per country, recognized by the respective national health authorities, provides the information. The national data are noted on standard tables, and each source is responsible for the quality of the data provided. The Union of Soviet Socialist Republics and Yugoslavia have now officially set up national reference centers for AIDS and will be participating in the work of the WHO European Centre for the next report.

FIGURE 4. Incidence rates of acquired immunodeficiency syndrome, by 6-month period of diagnosis — 14 European countries,* through June 30, 1985



*Czechoslovakia, Iceland, Poland (no reported cases), and Luxembourg (one case) are excluded.

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1985 Oct 11;34:613-15

Self-Reported Behavioral Change Among Gay and Bisexual Men — San Francisco

In August 1984 and April 1985, surveys of risk factors for human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) infections in gay and bisexual men living in San Francisco, California, were conducted (*1*). The surveys used a random probability sample designed to provide information about sexual practices of self-identified gay and bisexual men in San Francisco. The sample was drawn from telephone numbers listed with only male names. City census tracts were weighted according to the proportion of unmarried males residing in each tract.

Exceptional care was taken to identify appropriate respondents. Following a brief introduction about the survey, and after an assurance of confidentiality, each potential respondent was told, "We are interested in speaking with one group of people who are at highest risk for AIDS: men who have sex with other men or who identify themselves as gay or bisexual." The interviewer then asked, ". . . would you include yourself in one of these groups?" Those who responded positively were considered eligible and asked to participate. Among those eligible, 81.4% agreed to participate. A total of 500 men were interviewed in the August 1984 survey. In April 1985, participants from the original panel of 500 were randomly selected and telephoned. Of those contacted, 93.2% agreed to participate again for a total of 301 repeat interviews.

Results of the initial survey were used by the San Francisco AIDS Foundation to plan an educational campaign designed to encourage gay and bisexual men to avoid "unsafe" sexual practices. Practices defined as "unsafe" by the San Francisco AIDS Foundation included anal intercourse without a condom and oral sex with exchange of semen. These practices were specifically discouraged in advertisements that were placed primarily in gay newspapers.

Between August 1984 and April 1985, the proportion of gay and bisexual men who reported that they were monogamous, celibate, or performed "unsafe" sexual practices only with their steady partner increased from 69% to 81% (Table 1). Similarly, fewer gay and bisexual men reported having more than one sexual partner in the past 30 days. Similar changes also were noted for other "unsafe" sexual practices.

Reported by SB Puckett, M Bart, San Francisco AIDS Foundation, LL Bye, Research and Decisions Corporation, J Amory, San Francisco Health Dept; Div of Health Education, Center for Health Promotion and Education, CDC.

Editorial Note: The virus that causes AIDS (HTLV-III/LAV) is spread by sexual contact, needle sharing, and parenteral exposure to blood or blood products and from mother to child during the perinatal period (*2*). Groups concerned about reducing the transmission of HTLV-III/LAV, such as the San Francisco AIDS Foundation, are addressing certain practices of homosexual men that appear likely to facilitate the transmission of HTLV-III/LAV. Published reports have associated AIDS or HTLV-III/LAV infection with practices such as having multiple sex partners and participating in anal intercourse (*3-6*). Oral-genital sex has also been addressed as a practice which may facilitate virus transmission because HTLV-III/LAV has been isolated from semen (*7*).

The multiple and varied sources of information about AIDS and its presumed methods of transmission preclude attribution of behavioral change among homosexuals to any single source or educational intervention. The self-reported changes observed in these two telephone surveys are consistent with the aims of the campaign conducted by the San Francisco AIDS Foundation and those of similar efforts by other groups. Although the data are self reported, alterations in sexual practices appear to have occurred over a relatively short period of time.

These two surveys suggest that some gay and bisexual men in San Francisco have modified their sexual practices. They provide support for continued efforts to promote change in behaviors that may reduce transmission. However, the importance of any behavioral changes

in reducing the risk within a high-risk population of acquiring AIDS must be assessed in relation to any change in the prevalence of HTLV-III/LAV infection within that population. In San Francisco, between 1978 and 1985, the prevalence of serum antibodies to HTLV-III/LAV among a selected cohort of gay men in the San Francisco City Clinic increased from 4.5% to 73.1% (*8*). If the prevalence of infection has increased as much among all gay and bisexual men in San Francisco, much larger changes in sexual practices will be necessary to achieve a substantial reduction of risk among those who remain uninfected. However, most communities probably have infection prevalences lower than those reported in the San Francisco cohort. In such communities, significant modification of sexual practices may have a greater effect on risk reduction. Modification of sexual practices is the main means available at present by which gay and bisexual men who are HTLV-III/LAV-antibody negative can reduce their risk of becoming infected.

Continued surveillance of behaviors that may result in the transmission of HTLV-III/LAV is essential for designing information and education campaigns and for evaluating the impact of those campaigns and may provide information permitting prediction of AIDS incidence.

TABLE 1. Changes in selected self-reported sexual practices* among gay and bisexual men — San Francisco, California, August 1984 and April 1985

Practice	Survey	
	August 1984	April 1985
Monogamous, celibate, or no unsafe sexual activity outside a primary relationship.†	69%	81%
More than one sexual partner during last 30 days.	49%	36%
Anal intercourse (without a condom) with secondary partner§ during past 30 days.	18%	12%
Oral sex (with exchange of semen) with secondary partners during past 30 days.	17%	7%

*Behavior changes statistically significant at 0.05 level or less.

†For the purposes of this study, an unsafe sexual practice included anal intercourse without a condom and oral sex with exchange of semen.

§Sexual contact other than the primary partner.

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1985 Oct 25;34:655

International Conference on Acquired Immunodeficiency Syndrome

An International Conference on Acquired Immunodeficiency Syndrome (AIDS) will be held June 23-25, 1986, at Palais des Congres, Paris, France. The conference will cover all aspects of contemporary research, including: virology, molecular biology, animal models, clinical aspects, pediatric AIDS, African AIDS, therapy, diagnostics, serology, epidemiology, and public health and psycho-social implications.

The deadline for abstracts is February 1, 1986. For information, contact: Dr. Jeane-Claude Gluckman, Faculté de Médecine Pitié-Salpêtrière, 91 Boulevard de l'Hôpital, 75634 Paris CEDEX 13 (France); telephone: (1) 45 70 27 02.

1985 Nov 8;34:678–79

Acquired Immunodeficiency Syndrome: Meeting of the WHO Collaborating Centres on AIDS

Following a consultation on acquired immunodeficiency syndrome (AIDS) in April 1985, the World Health Organization (WHO) established a network of Collaborating Centres on AIDS to provide a framework for international cooperation, including training, provision of reference reagents, evaluation of methods, and epidemiologic surveillance (*1*). The directors of the WHO Collaborating Centres, together with other experts in virology and public health, met in Geneva, Switzerland, September 25-26, 1985, to make recommendations for WHO's 1986-1987 international activities on AIDS.

Participants at the meeting reviewed the epidemiologic status of AIDS and affirmed the disease was now a major public health problem in several countries of the developed and developing world. Over 13,000 AIDS cases were reported from 1981 to September 1985 in the United States, and the number of reported cases will probably double in 1986. More than 2,000 cases have been reported from 40 other countries. The Director-General of WHO expressed the great degree of concern felt in almost all 166 Member States of WHO regarding AIDS.

In the United States and western Europe, approximately 90% of cases among adults continued to occur in homosexual and bisexual men, intravenous drug users, and sexual partners of persons in these groups. Although it is expected that additional AIDS cases may develop in recipients of blood and blood products who are already infected with the causative virus of AIDS, lymphadenopathy-associated virus/human T-lymphotropic virus type III (LAV/HTLV-III), future infections from blood and blood products can now virtually be considered preventable by screening blood donations for evidence of antibodies to the virus. Most pediatric cases of AIDS have occurred among children of persons in known risk groups. In several developing countries, however, most adult AIDS patients have been sexually active heterosexual men and women.

There is no evidence that LAV/HTLV-III is spread through casual contact with an infected individual, such as contact in family settings, schools, or other groups living or working together. The risk of infection of health-care workers seems very remote. At present, there is no evidence that blood-sucking insects transmit the disease.

The group concluded that an internationally accepted case definition of AIDS, relevant to its most severe clinical manifestations, was needed for surveillance purposes. For therapeutic trials or other research purposes, broader definitions may be required.

In countries where appropriate technologies are available, the surveillance definition for AIDS given by CDC and published by WHO (*2*) was endorsed by the group. Surveillance definitions are now being developed for use in countries where access to diagnostic techniques is limited.

The group concurred on the following issues:

1. For routine, large-scale testing for AIDS, the only practical methods currently available involve tests for antibodies to LAV/HTLV-III.
2. All sera reactive for anti-LAV/HTLV-III antibody in a radioimmunoassay (RIA) or enzyme-linked immunoabsorbent assay (ELISA) test should be confirmed by an independent test system, e.g., by immunoprecipitation or immunoblot tests. Assays for this antibody of higher specificity but lower sensitivity than that of conventional commercial ELISAs may be more appropriate for seroepidemiolcgic studies where confirmatory tests are not available.
3. Posttransfusion AIDS can be eliminated by excluding donors from groups at increased

risk of infection and by screening all units of blood for antibodies to LAV/HTLV-III. Because infection can be transmitted from women to babies during the perinatal period, women who are antibody-positive should be advised to avoid pregnancy.

4. Reusing unsterile needles carries with it the risk of transmitting AIDS and other blood-borne infections. This procedure should be strongly discouraged.
5. The possible transmission of infectious diseases through the use of jet injection devices was discussed. After considering the available information, the group concluded that there was no evidence of a risk of transmission of blood-borne infection from using such devices.
6. Studies to identify effective therapeutic regimens for AIDS patients and work on developing vaccines are in progress in several countries. Successful therapy may require a combination of antiviral agents and substances that enhance immune responsiveness. Passive protection against infection is being pursued experimentally, including the use of monoclonal antibodies and hyperimmune gammaglobulin. Further work towards understanding the role of antibody in preventing and treating AIDS is required before these substances can be utilized in patients.
7. New antiviral drugs require careful study using the procedures of classical drug-evaluation protocols, under the guidelines of national control authorities. Studies to define the pharmacology, toxicity, and tolerated dosages must precede studies to determine the benefit.
8. Placebo-controlled studies in patients with mild forms of disease due to LAV/HTLV-III infection should be encouraged. Such studies will yield an answer on the efficacy of a drug more quickly and with fewer patients than the use of historic controls.
9. The prevalence of AIDS will depend heavily on the success of risk-reduction programs based on public information and education.
10. Because patients infected with LAV/HTLV-III often have immune-function abnormalities, administration of the commonly used live-virus vaccines (e.g., polio, measles) to such individuals could pose a theoretical risk. However, to date, no unexpected adverse reactions have been noted in individuals with antibody to LAV/HTLV-III, and such patients are free of overt signs of clinical AIDS when given the vaccines recommended by WHO for childhood or adult immunization programs.
11. T-lymphotropic retroviruses of simians provide potentially valuable models for studying the control and treatment of AIDS (*3*).
12. An important aspect of WHO activities on AIDS will be the collection of data on the incidence of the disease or its causative virus by Member States and the WHO Collaborating Centres and the regular transmission of this information to WHO headquarters. Wherever possible, information on the gender, age, recognized risk factor (if any), and major clinical features should also be provided

A full report of the meeting is available from the Director, Division of Communicable Diseases, WHO, Geneva.

Adapted from WHO Weekly Epidemiological Record *1985;60:333-5.*

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1985 Nov 15;34:681

Summary: Recommendations for Preventing Transmission of Infection with Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus in the Workplace

The information and recommendations contained in this document have been developed with particular emphasis on health-care workers and others in related occupations in which exposure might occur to blood from persons infected with HTLV-III/LAV, the "AIDS virus." Because of public concern about the purported risk of transmission of HTLV-III/LAV by persons providing personal services and those preparing and serving food and beverages, this document also addresses personal-service and food-service workers. Finally, it addresses "other workers"—persons in settings, such as offices, schools, factories, and construction sites, where there is no known risk of AIDS virus transmission.

Because AIDS is a bloodborne, sexually transmitted disease that is not spread by casual contact, this document does *not* recommend routine HTLV-III/LAV antibody screening for the groups addressed. Because AIDS is not transmitted through preparation or serving of food and beverages, these recommendations state that food-service workers known to be infected with AIDS should not be restricted from work unless they have another infection or illness for which such restriction would be warranted.

This document contains detailed recommendations for precautions appropriate to prevent transmission of all bloodborne infectious diseases to people exposed—in the course of their duties—to blood from persons who may be infected with HTLV-III/LAV. They emphasize that health-care workers should take all possible precautions to prevent needlestick injury. The recommendations are based on the well-documented modes of HTLV-III/LAV transmission and incorporate a "worst case" scenario, the hepatitis B model of transmission. Because the hepatitis B virus is also bloodborne and is both hardier and more infectious than HTLV-III/LAV, recommendations that would prevent transmission of hepatitis B will also prevent transmission of AIDS.

Formulation of specific recommendations for health-care workers who perform invasive procedures is in progress.

1985 Nov 15;34:681–86, 691–95

Recommendations for Preventing Transmission of Infection with Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus in the Workplace

Persons at increased risk of acquiring infection with human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the virus that causes acquired immunodeficiency syndrome (AIDS), include homosexual and bisexual men, intravenous (IV) drug abusers, persons transfused with contaminated blood or blood products, heterosexual contacts of persons with HTLV-III/LAV infection, and children born to infected mothers. HTLV-III/LAV is transmitted through sexual contact, parenteral exposure to infected blood or blood components, and perinatal transmission from mother to neonate. HTLV-III/LAV has been isolated from blood, semen, saliva, tears, breast milk, and urine and is likely to be isolated from some other body fluids, secretions, and excretions, but epidemiologic evidence has implicated only blood and semen in transmission. Studies of nonsexual household contacts of AIDS patients indicate that casual contact with saliva and tears does not result in transmission of infection. Spread of infection to household contacts of infected persons has not been detected when the household contacts have not been sex partners or have not been infants of infected mothers. The kind of nonsexual person-to-person contact that generally occurs among workers and clients or consumers in the workplace does not pose a risk for transmission of HTLV-III/LAV.

As in the development of any such recommendations, the paramount consideration is the protection of the public's health. The following recommendations have been developed for all workers, particularly workers in occupations in which exposure might occur to blood from individuals infected with HTLV-III/LAV. These recommendations reinforce and supplement the specific recommendations that were published earlier for clinical and laboratory staffs (*1*) and for dental-care personnel and persons performing necropsies and morticians' services (*2*). Because of public concern about the purported risk of transmission of HTLV-III/LAV by persons

providing personal services and by food and beverages, these recommendations contain information and recommendations for personal-service and food-service workers. Finally, these recommendations address workplaces in general where there is no known risk of transmission of HTLV-III/LAV (e.g., offices, schools, factories, construction sites). Formulation of specific recommendations for health-care workers (HCWs) who perform invasive procedures (e.g., surgeons, dentists) is in progress. Separate recommendations are also being developed to prevent HTLV-III/LAV transmission in prisons, other correctional facilities, and institutions housing individuals who may exhibit uncontrollable behavior (e.g., custodial institutions) and in the perinatal setting. In addition, separate recommendations have already been developed for children in schools and day-care centers (*3*).

HTLV-III/LAV-infected individuals include those with AIDS (*4*); those diagnosed by their physician(s) as having other illnesses due to infection with HTLV-III/LAV; and those who have virologic or serologic evidence of infection with HTLV-III/LAV but who are not ill.

These recommendations are based on the well-documented modes of HTLV-III/LAV transmission identified in epidemiologic studies and on comparison with the hepatitis B experience. Other recommendations are based on the hepatitis B model of transmission.

COMPARISON WITH THE HEPATITIS B VIRUS EXPERIENCE

The epidemiology of HTLV-III/LAV infection is similar to that of hepatitis B virus (HBV) infection, and much that has been learned over the last 15 years related to the risk of acquiring hepatitis B in the workplace can be applied to understanding the risk of HTLV-III/LAV transmission in the health-care and other occupational settings. Both viruses are transmitted through sexual contact, parenteral exposure to contaminated blood or blood products, and perinatal transmission from infected mothers to their offspring. Thus, some of the same major groups at high risk for HBV infection (e.g., homosexual men, IV drug abusers, persons with hemophilia, infants born to infected mothers) are also the groups at highest risk for HTLV-III/LAV infection. Neither HBV nor HTLV-III/LAV has been shown to be transmitted by casual contact in the workplace, contaminated food or water, or airborne or fecal-oral routes (*5*).

HBV infection is an occupational risk for HCWs, but this risk is related to degree of contact with blood or contaminated needles. HCWs who do not have contact with blood or needles contaminated with blood are not at risk for acquiring HBV infection in the workplace (*6-8*).

In the health-care setting, HBV transmission has not been documented between hospitalized patients, except in hemodialysis units, where blood contamination of the environment has been extensive or where HBV-positive blood from one patient has been transferred to another patient through contamination of instruments. Evidence of HBV transmission from HCWs to patients has been rare and limited to situations in which the HCWs exhibited high concentrations of virus in their blood (at least 100,000,000 infectious virus particles per ml of serum), and the HCWs sustained a puncture wound while performing traumatic procedures on patients or had exudative or weeping lesions that allowed virus to contaminate instruments or open wounds of patients (*9-11*).

Current evidence indicates that, despite epidemiologic similarities of HBV and HTLV-III/LAV infection, the risk for HBV transmission in health-care settings far exceeds that for HTLV-III/LAV transmission. The risk of acquiring HBV infection following a needlestick from an HBV carrier ranges from 6% to 30% (*12,13*), far in excess of the risk of HTLV-III/LAV infection following a needlestick involving a source patient infected with HTLV-III/LAV, which is less than 1%. In addition, all HCWs who have been shown to transmit HBV infection in health-care settings have belonged to the subset of chronic HBV carriers who, when tested, have exhibited evidence of exceptionally high concentrations of virus (at least 100,000,000 infectious virus particles per ml) in their blood. Chronic carriers who have substantially lower concentrations of virus in their blood have not been implicated in transmission in the health-care setting (*9-11,14*). The HBV model thus represents a "worst case" condition in regard to transmission in health-care and other related settings. Therefore, recommendations for the control of HBV infection should, if followed, also effectively prevent spread of HTLV-III/LAV. Whether additional measures are indicated for those HCWs who perform invasive procedures will be addressed in the recommendations currently being developed.

Routine screening of all patients or HCWs for evidence of HBV infection has never been recommended. Control of HBV transmission in the health-care setting has emphasized the implementation of recommendations for the appropriate handling of blood, other body fluids, and items soiled with blood or other body fluids.

TRANSMISSION FROM PATIENTS TO HEALTH-CARE WORKERS

HCWs include, but are not limited to, nurses, physicians, dentists and other dental workers, optometrists, podiatrists, chiropractors, laboratory and blood bank technologists and technicians, phlebotomists, dialysis personnel, paramedics, emergency medical technicians, medical

examiners, morticians, housekeepers, laundry workers, and others whose work involves contact with patients, their blood or other body fluids, or corpses.

Recommendations for HCWs emphasize precautions appropriate for preventing transmission of bloodborne infectious diseases, including HTLV-III/LAV and HBV infections. Thus, these precautions should be enforced routinely, as should other standard infection-control precautions, regardless of whether HCWs or patients are known to be infected with HTLV-III/LAV or HBV. In addition to being informed of these precautions, all HCWs, including students and housestaff, should be educated regarding the epidemiology, modes of transmission, and prevention of HTLV-III/LAV infection.

Risk of HCWs acquiring HTLV-III/LAV in the workplace. Using the HBV model, the highest risk for transmission of HTLV-III/LAV in the workplace would involve parenteral exposure to a needle or other sharp instrument contaminated with blood of an infected patient. The risk to HCWs of acquiring HTLV-III/LAV infection in the workplace has been evaluated in several studies. In five separate studies, a total of 1,498 HCWs have been tested for antibody to HTLV-III/LAV. In these studies, 666 (44.5%) of the HCWs had direct parenteral (needlestick or cut) or mucous membrane exposure to patients with AIDS or HTLV-III/LAV infection. Most of these exposures were to blood rather than to other body fluids. None of the HCWs whose initial serologic tests were negative developed subsequent evidence of HTLV-III/LAV infection following their exposures. Twenty-six HCWs in these five studies were seropositive when first tested; all but three of these persons belonged to groups recognized to be at increased risk for AIDS (*15*). Since one was tested anonymously, epidemiologic information was available on only two of these three seropositive HCWs. Although these two HCWs were reported as probable occupationally related HTLV-III/LAV infection (*15,16*), neither had a preexposure nor an early postexposure serum sample available to help determine the onset of infection. One case reported from England describes a nurse who seroconverted following an accidental parenteral exposure to a needle contaminated with blood from an AIDS patient (*17*).

In spite of the extremely low risk of transmission of HTLV-III/LAV infection, even when needlestick injuries occur, more emphasis must be given to precautions targeted to prevent needlestick injuries in HCWs caring for any patient, since such injuries continue to occur even during the care of patients who are known to be infected with HTLV-III/LAV.

Precautions to prevent acquisition of HTLV-III/LAV infection by HCWs in the workplace. These precautions represent prudent practices that apply to preventing transmission of HTLV-III/LAV and other bloodborne infections and should be used routinely (*18*).

1. Sharp items (needles, scalpel blades, and other sharp instruments) should be considered as potentially infective and be handled with extraordinary care to prevent accidental injuries.
2. Disposable syringes and needles, scalpel blades, and other sharp items should be placed into puncture-resistant containers located as close as practical to the area in which they were used. To prevent needlestick injuries, needles should not be recapped, purposefully bent, broken, removed from disposable syringes, or otherwise manipulated by hand.
3. When the possibility of exposure to blood or other body fluids exists, routinely recommended precautions should be followed. The anticipated exposure may require gloves alone, as in handling items soiled with blood or equipment contaminated with blood or other body fluids, or may also require gowns, masks, and eye-coverings when performing procedures involving more extensive contact with blood or potentially infective body fluids, as in some dental or endoscopic procedures or postmortem examinations. Hands should be washed thoroughly and immediately if they accidentally become contaminated with blood.
4. To minimize the need for emergency mouth-to-mouth resuscitation, mouth pieces, resuscitation bags, or other ventilation devices should be strategically located and available for use in areas where the need for resuscitation is predictable.
5. Pregnant HCWs are not known to be at greater risk of contracting HTLV-III/LAV infections than HCWs who are not pregnant; however, if a HCW develops HTLV-III/LAV infection during pregnancy, the infant is at increased risk of infection resulting from perinatal transmission. Because of this risk, pregnant HCWs should be especially familiar with precautions for the preventing HTLV-III/LAV transmission (*19*).

Precautions for HCWs during home care of persons infected with HTLV-III/LAV. Persons infected with HTLV-III/LAV can be safely cared for in home environments. Studies of family members of patients infected with HTLV-III/LAV have found no evidence of HTLV-III/LAV transmission to adults who were not sexual contacts of the infected patients or to children who were not at risk for perinatal transmission (*3*). HCWs providing home care face the same

risk of transmission of infection as HCWs in hospitals and other health-care settings, especially if there are needlesticks or other parenteral or mucous membrane exposures to blood or other body fluids.

When providing health-care service in the home to persons infected with HTLV-III/LAV, measures similar to those used in hospitals are appropriate. As in the hospital, needles should not be recapped, purposefully bent, broken, removed from disposable syringes, or otherwise manipulated by hand. Needles and other sharp items should be placed into puncture-resistant containers and disposed of in accordance with local regulations for solid waste. Blood and other body fluids can be flushed down the toilet. Other items for disposal that are contaminated with blood or other body fluids that cannot be flushed down the toilet should be wrapped securely in a plastic bag that is impervious and sturdy (not easily penetrated). It should be placed in a second bag before being discarded in a manner consistent with local regulations for solid waste disposal. Spills of blood or other body fluids should be cleaned with soap and water or a household detergent. As in the hospital, individuals cleaning up such spills should wear disposable gloves. A disinfectant solution or a freshly prepared solution of sodium hypochlorite (household bleach, see below) should be used to wipe the area after cleaning.

Precautions for providers of prehospital emergency health care. Providers of prehospital emergency health care include the following: paramedics, emergency medical technicians, law enforcement personnel, firefighters, lifeguards, and others whose job might require them to provide first-response medical care. The risk of transmission of infection, including HTLV-III/LAV infection, from infected persons to providers of prehospital emergency health care should be no higher than that for HCWs providing emergency care in the hospital if appropriate precautions are taken to prevent exposure to blood or other body fluids.

Providers of prehospital emergency health care should follow the precautions outlined above for other HCWs. No transmission of HBV infection during mouth-to-mouth resuscitation has been documented. However, because of the theoretical risk of salivary transmission of HTLV-III/LAV during mouth-to-mouth resuscitation, special attention should be given to the use of disposable airway equipment or resuscitation bags and the wearing of gloves when in contact with blood or other body fluids. Resuscitation equipment and devices known or suspected to be contaminated with blood or other body fluids should be used once and disposed of or be thoroughly cleaned and disinfected after each use.

Management of parenteral and mucous membrane exposures of HCWs. If a HCW has a parenteral (e.g., needlestick or cut) or mucous membrane (e.g., splash to the eye or mouth) exposure to blood or other body fluids, the source patient should be assessed clinically and epidemiologically to determine the likelihood of HTLV-III/LAV infection. If the assessment suggests that infection may exist, the patient should be informed of the incident and requested to consent to serologic testing for evidence of HTLV-III/LAV infection. If the source patient has AIDS or other evidence of HTLV-III/LAV infection, declines testing, or has a positive test, the HCW should be evaluated clinically and serologically for evidence of HTLV-III/LAV infection as soon as possible after the exposure, and, if seronegative, retested after 6 weeks and on a periodic basis thereafter (e.g., 3, 6, and 12 months following exposure) to determine if transmission has occurred. During this follow-up period, especially the first 6-12 weeks, when most infected persons are expected to seroconvert, exposed HCWs should receive counseling about the risk of infection and follow U.S. Public Health Service (PHS) recommendations for preventing transmission of AIDS (*20,21*). If the source patient is seronegative and has no other evidence of HTLV-III/LAV infection, no further follow-up of the HCW is necessary. If the source patient cannot be identified, decisions regarding appropriate follow-up should be individualized based on the type of exposure and the likelihood that the source patient was infected.

Serologic testing of patients. Routine serologic testing of all patients for antibody to HTLV-III/LAV is not recommended to prevent transmission of HTLV-III/LAV infection in the workplace. Results of such testing are unlikely to further reduce the risk of transmission, which, even with documented needlesticks, is already extremely low. Furthermore, the risk of needlestick and other parenteral exposures could be reduced by emphasizing and more consistently implementing routinely recommended infection-control precautions (e.g., not recapping needles). Moreover, results of routine serologic testing would not be available for emergency cases and patients with short lengths of stay, and additional tests to determine whether a positive test was a true or false positive would be required in populations with a low prevalence of infection. However, this recommendation is based only on considerations of occupational risks and should not be construed as a recommendation against other uses of the serologic test, such as for diagnosis or to facilitate medical management of patients. Since the experience with infected patients varies substantially among hospitals (75% of all

AIDS cases have been reported by only 280 of the more than 6,000 acute-care hospitals in the United States), some hospitals in certain geographic areas may deem it appropriate to initiate serologic testing of patients.

TRANSMISSION FROM HEALTH-CARE WORKERS TO PATIENTS

Risk of transmission of HTLV-III/LAV infection from HCWs to patients. Although there is no evidence that HCWs infected with HTLV-III/LAV have transmitted infection to patients, a risk of transmission of HTLV-III/LAV infection from HCWs to patients would exist in situations where there is both (1) a high degree of trauma to the patient that would provide a portal of entry for the virus (e.g., during invasive procedures) and (2) access of blood or serous fluid from the infected HCW to the open tissue of a patient, as could occur if the HCW sustains a needlestick or scalpel injury during an invasive procedure. HCWs known to be infected with HTLV-III/LAV who do not perform invasive procedures need not be restricted from work unless they have evidence of other infection or illness for which any HCW should be restricted. Whether additional restrictions are indicated for HCWs who perform invasive procedures is currently being considered.

Precautions to prevent transmission of HTLV-III/LAV infection from HCWs to patients. These precautions apply to all HCWs, regardless of whether they perform invasive procedures: (1) All HCWs should wear gloves for direct contact with mucous membranes or nonintact skin of all patients and (2) HCWs who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling patient-care equipment until the condition resolves.

Management of parenteral and mucous membrane exposures of patients. If a patient has a parenteral or mucous membrane exposure to blood or other body fluids of a HCW, the patient should be informed of the incident and the same procedure outlined above for exposures of HCWs to patients should be followed for both the source HCW and the potentially exposed patient. Management of this type of exposure will be addressed in more detail in the recommendations for HCWs who perform invasive procedures.

Serologic testing of HCWs. Routine serologic testing of HCWs who do not perform invasive procedures (including providers of home and prehospital emergency care) is not recommended to prevent transmission of HTLV-III/LAV infection. The risk of transmission is extremely low and can be further minimized when routinely recommended infection-control precautions are followed. However, serologic testing should be available to HCWs who may wish to know their HTLV-III/LAV infection status. Whether indications exist for serologic testing of HCWs who perform invasive procedures is currently being considered.

Risk of occupational acquisition of other infectious diseases by HCWs infected with HTLV-III/LAV. HCWs who are known to be infected with HTLV-III/LAV and who have defective immune systems are at increased risk of acquiring or experiencing serious complications of other infectious diseases. Of particular concern is the risk of severe infection following exposure to patients with infectious diseases that are easily transmitted if appropriate precautions are not taken (e.g., tuberculosis). HCWs infected with HTLV-III/LAV should be counseled about the potential risk associated with taking care of patients with transmissible infections and should continue to follow existing recommendations for infection control to minimize their risk of exposure to other infectious agents (*18,19*). The HCWs' personal physician(s), in conjunction with their institutions' personnel health services or medical directors, should determine on an individual basis whether the infected HCWs can adequately and safely perform patient-care duties and suggest changes in work assignments, if indicated. In making this determination, recommendations of the Immunization Practices Advisory Committee and institutional policies concerning requirements for vaccinating HCWs with live-virus vaccines should also be considered.

STERILIZATION, DISINFECTION, HOUSEKEEPING, AND WASTE DISPOSAL TO PREVENT TRANSMISSION OF HTLV-III/LAV

Sterilization and disinfection procedures currently recommended for use (*22,23*) in health-care and dental facilities are adequate to sterilize or disinfect instruments, devices, or other items contaminated with the blood or other body fluids from individuals infected with HTLV-III/LAV. Instruments or other nondisposable items that enter normally sterile tissue or the vascular system or through which blood flows should be sterilized before reuse. Surgical instruments used on all patients should be decontaminated after use rather than just rinsed with water. Decontamination can be accomplished by machine or by hand cleaning by trained personnel wearing appropriate protective attire (*24*) and using appropriate chemical germicides. Instruments or other nondisposable items that touch intact mucous membranes should receive high-level disinfection.

Several liquid chemical germicides commonly used in laboratories and health-care facilities have been shown to kill HTLV-III/LAV at concentrations much lower than are used in practice (*25*). When decontaminating instruments or medical devices, chemical germicides that are

registered with and approved by the U.S. Environmental Protection Agency (EPA) as "sterilants" can be used either for sterilization or for high-level disinfection depending on contact time; germicides that are approved for use as "hospital disinfectants" and are mycobactericidal when used at appropriate dilutions can also be used for high-level disinfection of devices and instruments. Germicides that are mycobactericidal are preferred because mycobacteria represent one of the most resistant groups of microorganisms; therefore, germicides that are effective against mycobacteria are also effective against other bacterial and viral pathogens. When chemical germicides are used, instruments or devices to be sterilized or disinfected should be thoroughly cleaned before exposure to the germicide, and the manufacturer's instructions for use of the germicide should be followed.

Laundry and dishwashing cycles commonly used in hospitals are adequate to decontaminate linens, dishes, glassware, and utensils. When cleaning environmental surfaces, housekeeping procedures commonly used in hospitals are adequate; surfaces exposed to blood and body fluids should be cleaned with a detergent followed by decontamination using an EPA-approved hospital disinfectant that is mycobactericidal. Individuals cleaning up such spills should wear disposable gloves. Information on specific label claims of commercial germicides can be obtained by writing to the Disinfectants Branch, Office of Pesticides, Environmental Protection Agency, 401 M Street, S.W., Washington, D.C., 20460.

In addition to hospital disinfectants, a freshly prepared solution of sodium hypochlorite (household bleach) is an inexpensive and very effective germicide (*25*). Concentrations ranging from 5,000 ppm (a 1:10 dilution of household bleach) to 500 ppm (a 1:100 dilution) sodium hypochlorite are effective, depending on the amount of organic material (e.g., blood, mucus, etc.) present on the surface to be cleaned and disinfected.

Sharp items should be considered as potentially infective and should be handled and disposed of with extraordinary care to prevent accidental injuries. Other potentially infective waste should be contained and transported in clearly identified impervious plastic bags. If the outside of the bag is contaminated with blood or other body fluids, a second outer bag should be used. Recommended practices for disposal of infective waste (*23*) are adequate for disposal of waste contaminated by HTLV-III/LAV. Blood and other body fluids may be carefully poured down a drain connected to a sanitary sewer.

CONSIDERATIONS RELEVANT TO OTHER WORKERS

Personal-service workers (PSWs). PSWs are defined as individuals whose occupations involve close personal contact with clients (e.g., hairdressers, barbers, estheticians, cosmetologists, manicurists, pedicurists, massage therapists). PSWs whose services (tattooing, ear piercing, acupuncture, etc.) require needles or other instruments that penetrate the skin should follow precautions indicated for HCWs. Although there is no evidence of transmission of HTLV-III/LAV from clients to PSWs, from PSWs to clients, or between clients of PSWs, a risk of transmission would exist from PSWs to clients and vice versa in situations where there is both (1) trauma to one of the individuals that would provide a portal of entry for the virus and (2) access of blood or serous fluid from one infected person to the open tissue of the other, as could occur if either sustained a cut. A risk of transmission from client to client exists when instruments contaminated with blood are not sterilized or disinfected between clients. However, HBV transmission has been documented only rarely in acupuncture, ear piercing, and tattoo establishments and never in other personal-service settings, indicating that any risk for HTLV-III/LAV transmission in personal-service settings must be extremely low.

All PSWs should be educated about transmission of bloodborne infections, including HTLV-III/LAV and HBV. Such education should emphasize principles of good hygiene, antisepsis, and disinfection. This education can be accomplished by national or state professional organizations, with assistance from state and local health departments, using lectures at meetings or self-instructional materials. Licensure requirements should include evidence of such education. Instruments that are intended to penetrate the skin (e.g., tattooing and acupuncture needles, ear piercing devices) should be used once and disposed of or be thoroughly cleaned and sterilized after each use using procedures recommended for use in health-care institutions. Instruments not intended to penetrate the skin but which may become contaminated with blood (e.g., razors), should be used for only one client and be disposed of or thoroughly cleaned and disinfected after use using procedures recommended for use in health-care institutions. Any PSW with exudative lesions or weeping dermatitis, regardless of HTLV-III/LAV infection status, should refrain from direct contact with clients until the condition resolves. PSWs known to be infected with HTLV-III/LAV need not be restricted from work unless they have evidence of other infections or illnesses for which any PSW should also be restricted.

Routine serologic testing of PSWs for antibody to HTLV-III/LAV is not recommended to prevent transmission from PSWs to clients.

Food-service workers (FSWs). FSWs are defined as individuals whose occupations involve the preparation or serving of food or beverages (e.g., cooks, caterers, servers, waiters, bartenders, airline attendants). All epidemiologic and laboratory evidence indicates that bloodborne and sexually transmitted infections are not transmitted during the preparation or serving of food or beverages, and no instances of HBV or HTLV-III/LAV transmission have been documented in this setting.

All FSWs should follow recommended standards and practices of good personal hygiene and food sanitation (*26*). All FSWs should exercise care to avoid injury to hands when preparing food. Should such an injury occur, both aesthetic and sanitary considerations would dictate that food contaminated with blood be discarded. FSWs known to be infected with HTLV-III/LAV need not be restricted from work unless they have evidence of other infection or illness for which any FSW should also be restricted.

Routine serologic testing of FSWs for antibody to HTLV-III/LAV is not recommended to prevent disease transmission from FSWs to consumers.

Other workers sharing the same work environment. No known risk of transmission to co-workers, clients, or consumers exists from HTLV-III/LAV-infected workers in other settings (e.g., offices, schools, factories, construction sites). This infection is spread by sexual contact with infected persons, injection of contaminated blood or blood products, and by perinatal transmission. Workers known to be infected with HTLV-III/LAV should not be restricted from work solely based on this finding. Moreover, they should not be restricted from using telephones, office equipment, toilets, showers, eating facilities, and water fountains. Equipment contaminated with blood or other body fluids of any worker, regardless of HTLV-III/LAV infection status, should be cleaned with soap and water or a detergent. A disinfectant solution or a fresh solution of sodium hypochlorite (household bleach, see above) should be used to wipe the area after cleaning.

OTHER ISSUES IN THE WORKPLACE

The information and recommendations contained in this document do not address all the potential issues that may have to be considered when making specific employment decisions for persons with HTLV-III/LAV infection. The diagnosis of HTLV-III/LAV infection may evoke unwarranted fear and suspicion in some co-workers. Other issues that may be considered include the need for confidentiality, applicable federal, state, or local laws governing occupational safety and health, civil rights of employees, workers' compensation laws, provisions of collective bargaining agreements, confidentiality of medical records, informed consent, employee and patient privacy rights, and employee right-to-know statutes.

DEVELOPMENT OF THESE RECOMMENDATIONS

The information and recommendations contained in these recommendations were developed and compiled by CDC and other PHS agencies in consultation with individuals representing various organizations. The following organizations were represented: Association of State and Territorial Health Officials, Conference of State and Territorial Epidemiologists, Association of State and Territorial Public Health Laboratory Directors, National Association of County Health Officials, American Hospital Association, United States Conference of Local Health Officers, Association for Practitioners in Infection Control, Society of Hospital Epidemiologists of America, American Dental Association, American Medical Association, American Nurses' Association, American Association of Medical Colleges, American Association of Dental Schools, National Institutes of Health, Food and Drug Administration, Food Research Institute, National Restaurant Association, National Hairdressers and Cosmetologists Association, National Gay Task Force, National Funeral Directors and Morticians Association, American Association of Physicians for Human Rights, and National Association of Emergency Medical Technicians. The consultants also included a labor union representative, an attorney, a corporate medical director, and a pathologist. However, these recommendations may not reflect the views of individual consultants or the organizations they represented.

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Recommendations for Assisting in the Prevention of Perinatal Transmission of Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus and Acquired Immunodeficiency Syndrome

The information and recommendations in this document are intended to assist health-care providers and state and local health departments in developing procedures to prevent perinatal transmission of human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the virus that causes acquired immunodeficiency syndrome (AIDS).

This document contains recommendations for providing counselling and, when indicated, testing for antibody to HTLV-III/LAV for women who are at increased risk of acquiring the virus and who are either pregnant or may become pregnant. It is important that these women know they are at risk, as well as know and understand their HTLV-III/LAV-antibody status, so they can make informed decisions to help prevent perinatally acquired HTLV-III/LAV.

Through counselling, uninfected women can learn how to avoid becoming infected, and infected women can choose to delay pregnancy until more is known about perinatal transmission of the virus. If already pregnant, infected women can be provided information for managing the pregnancy and caring for the child.

Currently available data indicate that most pediatric HTLV-III/LAV infections and AIDS are acquired perinatally from infected women, but additional studies are needed to better quantify the risk of transmission from an infected pregnant woman to the fetus or newborn.

The recommendations below pertain to women. However, men who are HTLV-III/LAV-antibody positive should also be counselled regarding the risks of sexual and perinatal transmission, so they can refer for counselling and testing their sex partners who may be pregnant or considering pregnancy.

BACKGROUND

Pediatric AIDS Cases due to Perinatal Transmission. As of December 1, 1985, 217 (1%) of the 15,172 AIDS cases reported to CDC occurred among children under 13 years of age. Sixty percent of these children are known to have died. These 217 cases represent only the more severe manifestations of HTLV-III/LAV infection. Less severe manifestations, often described as AIDS-related complex (ARC), are not reported to CDC, so the number of children with clinically significant illness attributable to HTLV-III/LAV infection is greater than the reported cases of pediatric AIDS. In addition, a number of infected children are probably asymptomatic.

Of the 217 reported pediatric AIDS patients, 165 (76%) have as their only known risk factor a mother belonging to a group with increased prevalence of HTLV-III/LAV infection. An additional 18% of the pediatric cases are attributable to transfusions of blood or blood products, while risk factor information is missing or incomplete on the remaining 6%. Of the 217 children with AIDS, 48% had mothers who were intravenous (IV) drug abusers; 17% had mothers who were born in Haiti; and 10% had mothers who were sex partners of either IV drug abusers or bisexual men.

Of the patients with perinatally acquired AIDS, 45% resided in New York City, while Florida and New Jersey accounted for an additional 32%.

Mechanisms of Perinatal Transmission. It is believed that HTLV-III/LAV is transmitted from infected women to their fetuses or offspring during pregnancy, during labor and delivery, or perhaps shortly after birth. Transmission of the virus during pregnancy or labor and delivery is demonstrated by two reported AIDS cases occurring in children who had no contact with their infected mothers after birth. One was delivered by Cesarean section (*1,2*).

Transmission of the virus after birth has been implicated in one case of HTLV-III/LAV infection in a child born to a mother reported to have acquired the infection from a postpartum blood transfusion. Since she breastfed the child for 6 weeks, the authors suggested breastfeeding as the possible mode of transmission (*3*). Recently, HTLV-III/LAV has been isolated from the breast milk of infected women (*4*).

Risk of Perinatal Transmission from Infected Mothers. The rate of perinatal transmission of HTLV-III/LAV from infected pregnant women is unknown; however, available data suggest a high rate. In one study of 20 infants born to infected mothers who had already delivered one infant with AIDS, 13 (65%) had serologic and/or clinical evidence of infection with HTLV-III/LAV several months after birth (*5,6*). Since these women were selected on the basis of having previously transmitted HTLV-III/LAV perinatally, this study may overestimate the average risk of transmission for all infected pregnant women.

Perinatal transmission from an infected mother to her newborn is not inevitable. Of three children born to women who became infected with HTLV-III/LAV by artificial insemination from an infected donor, all were in good health and negative for antibody to the virus more than 1 year after birth (*7*). Another child, born to a woman who was already pregnant at the time of AIDS diagnosis and was demonstrated to be viremic, was seronegative, culture negative, and healthy at birth and at 4 months of age (*8*). In a retrospective study evaluating nine children under 5 years of age whose mothers were later diagnosed with AIDS, two (22%) had antibody to HTLV-III/LAV (*9*). The infection status of these women during pregnancy was unknown.

In these studies, the rate of transmission ranged from 0% (0/3) to 65% (13/20). Additional studies are needed to better define the rate of transmission and variables associated with it.

Risk of Illness among Infected Pregnant Women. Pregnancy is associated with suppression of cell-mediated immunity and increased susceptibility to some infections (*10*). The T-helper to T-suppressor ratio is decreased during normal pregnancy, being lowest in the third trimester, and returns to normal approximately 3 months postpartum (*10*). It is not known whether pregnancy increases an infected woman's risk of developing AIDS or ARC, but one study suggests it does (*6*). Fifteen infected women who were well at time of delivery were fol-

lowed an average of 30 months after the births of their children. Five (33%) subsequently developed AIDS; seven (47%) developed AIDS-related conditions; and only three (20%) remained asymptomatic. These results may not apply to all infected pregnant women, but they do suggest an increased likelihood of developing disease when an HTLV-III/LAV infection occurs in association with pregnancy.

Prevalence of HTLV-III/LAV Infection. Counselling and testing for antibody to HTLV-III/LAV, when indicated, to reduce perinatal transmission of AIDS will be most beneficial in populations of women with increased prevalence of the virus (Table 1). These include: women who have used drugs intravenously for nonmedical purposes; women who were born in countries where heterosexual transmission is thought to play a major role (*11,12*); women who have engaged in prostitution; and women who are or have been sex partners of men who abuse IV drugs, are bisexual, have hemophilia, were born in countries where heterosexual transmission is thought to play a major role (*11,12*), or have evidence of HTLV-III/LAV infection.

The prevalence of antibody to HTLV-III/LAV in U.S. populations of men and women ranges from less than 0.01% in female blood donors to as high as 74% in men with hemophilia (*13-15*). Among heterosexual IV drug abusers, the prevalence of HTLV-III/LAV infection ranges from 2% to 59% in various geographic areas (*16,17*). Seroprevalence among the heterosexual partners of persons at increased risk for AIDS varies from 10% in female partners of asymptomatic, seropositive hemophilia patients to 71% in the female partners of men with AIDS or ARC (*18-20*). Among prostitutes, the HTLV-III/LAV antibody prevalence varies from 5% to 40%, depending on geographic area, with most of the women with positive tests relating histories of IV drug abuse (*21*). Among female blood donors in Atlanta, Georgia, who denied belonging to high-risk groups, 0.01% had repeatedly reactive enzyme-linked immunosorbent assays (ELISAs) followed by reactive Western blot tests (*15*).

TABLE 1. Prevalence of HTLV-III/LAV antibody in heterosexual populations — United States

Populations	Location	No. tested	Prevalence (%)
Intravenous drug abusers (*16,17*)	New York City	274	59
	NJ* < 5 miles from NYC†	204	56
	NJ 5-10 miles from NYC	124	43
	NJ > 100 miles from NYC	55	2
	San Francisco	53	9
Persons with hemophilia (*13,14*)			
Factor VIII concentrate recipients		234	74
Factor IX concentrate recipients		36	39
Cryoprecipitate only recipients		15	40
Female prostitutes (*21*)	Seattle, Washington	92	5
	Miami, Florida	25	40
Female sex partners of men with AIDS or ARC		7	71
(two separate studies) (*19,20*)		42	47
Female sex partners of men with asymptomatic HTLV-III/LAV infection (*18*)		21	10
Haitians (*12*)	New York City	97	4
	Miami, Florida	129	8
Female blood donors (*15*)	Atlanta, Georgia	28,354	0.01

*New Jersey.
†New York City.

Commercially available tests to detect antibody to HTLV-III/LAV are ELISAs using antigens derived from whole disrupted HTLV-III/LAV. When the ELISA is reactive on initial testing, it is standard procedure to repeat the test on the same specimen. Repeatedly reactive tests are highly sensitive and specific for antibody to HTLV-III/LAV. However, when the ELISA is used to screen populations in which the prevalence of infection is very low (such as blood donors or women not in high-risk groups), the proportion of repeatedly reactive results that are falsely positive will be higher. For that reason, an additional test, such as a Western blot, is recommended following repeatedly reactive ELISA results, especially in low-prevalence populations. In populations with high prevalence of infection (e.g. homosexual men or IV drug abusers), most repeatedly reactive ELISAs are reactive by Western blot or another test. For example, among 109 IV drug abusers whose sera were repeatedly reactive by ELISA, over 85% were reactive by Western blot (*22*). In contrast, in a low-prevalence population of 69 female blood donors whose sera were repeatedly reactive by ELISA, only 5% were reactive by Western blot (*15*).

Due to the seriousness of the implications of HTLV-III/LAV-antibody reactivity, it is recommended that repeatedly reactive ELISAs be followed by an additional test, such as the Western blot. Women with sera repeatedly reactive by ELISA and reactive by Western blot should have a thorough medical evaluation. HTLV-III/LAV has been isolated from a single specimen in 67%-95% of persons with specific antibody (*23,24*). Because infection has been demonstrated in asymptomatic persons, the presence of specific antibody should be considered presumptive evidence of current infection and infectiousness.

RECOMMENDATIONS

Women Who Should be Offered Counselling and Testing. *Counselling services and testing for antibody to HTLV-III/LAV should be offered to pregnant women and women who may become pregnant in the following groups*: (1) those who have evidence of HTLV-III/LAV infection; (2) those who have used drugs intravenously for nonmedical purposes; (3) those who were born in countries where heterosexual transmission is thought to play a major role (*11,12*); (4) those who have engaged in prostitution; (5) those who are or have been sex partners of: IV drug abusers, bisexual men, men with hemophilia, men who were born in countries where heterosexual transmission is thought to play a major role (*11,12*), or men who otherwise have evidence of HTLV-III/LAV infection. If data become available to show that HTLV-III/LAV-antibody prevalence is increased in other groups or settings, counselling and testing programs should be extended to include them. Routine counselling and testing of women who are not included in the above-mentioned groups is not recommended due to low prevalence of infection and concern about interpretation of test results in a low-prevalence population. However if a woman requests it, the service should be provided in accordance with these recommendations.

Settings for Offering Counselling and Testing. Counselling and testing for antibody to HTLV-III/LAV to prevent perinatal transmission is recommended in the setting of any medical service in which women at increased risk are commonly encountered. These include services for treating IV drug abuse (i.e., detoxification and methadone maintenance), comprehensive hemophilia treatment centers, sexually transmitted disease clinics, and clinics that serve female prostitutes. In addition, services related to reproduction, such as family planning and infertility services, gynecologic, premarital, or preconceptual examinations, and prenatal and obstetric services should also consider offering counselling and testing if high-risk women are seen at these facilities. Testing for antibody to HTLV-III/LAV should be performed with the woman's consent after counselling is provided regarding risk factors for infection, the interpretation of test results, the risks of transmission, and the possible increased likelihood of disease among women infected with HTLV-III/LAV in association with pregnancy. The counselling and testing must be conducted in an environment in which confidentiality can be assured. In settings where confidential counselling and testing cannot be assured, information should be provided and referrals made to appropriate facilities.

Frequency of Testing. Detectable antibodies to HTLV-III/LAV may not develop until 2-4 months after exposure. This, and whether the woman is continuously exposed, should be taken into account when considering the need for, and frequency of, repeat testing. High-risk women should be offered counselling and testing before they become pregnant. During pregnancy, counselling and testing should be offered as soon as the woman is known to be pregnant. If the initial test is negative, repeat testing may be indicated near delivery to aid in the clinical management of the pregnant woman and newborn. If this final test is negative and

the mother's risk of exposure no longer exists, she may safely consider breastfeeding the child, and management of the child need not include the same concerns that would be appropriate if the woman had had a positive test or if she were at high risk and had not been tested at all.

Counselling Women with Positive Results. Women with virologic or serologic evidence of HTLV-III/LAV infection should be counselled regarding their own risk of AIDS and the risk of perinatal and sexual transmission of HTLV-III/LAV. Infected women should be counselled to refer their sex partners for counselling and testing. If the partners of these women are not infected, both members of the couple should be counselled on how they may modify their sexual practices to reduce the risk of HTLV-III/LAV transmission to the uninfected partner. In addition, the couple should be told not to donate blood, organs, or sperm and should be discouraged from using IV drugs and advised against sharing needles and syringes. When seeking medical or dental care for intercurrent illness, they should inform those responsible for their care of their positive antibody status so appropriate evaluation can be undertaken. Recommendations for providing information and advice to individuals infected with HTLV-III/LAV have been published (*25*).

Infected women should be advised to consider delaying pregnancy until more is known about perinatal transmission of the virus. Pregnant infected women may require additional medical and social support services due to an enhanced risk of opportunistic infections and psychosocial difficulties during and after pregnancy. Obstetric-care providers should be alert to signs and symptoms of HTLV-III/LAV and related opportunistic infections in these pregnant women and to the need for specialized medical care.

HTLV-III/LAV-infected women should be advised against breastfeeding to avoid postnatal transmission to a child who may not yet be infected. The child should receive follow-up pediatric evaluations to determine whether he/she has HTLV-III/LAV infection, and to diagnose and treat promptly any diseases that may be secondary to HTLV-III/LAV infection. Recommendations for educating and providing foster care for infected children have been published (*26*).

Counselling Women with Negative Test Results. A negative ELISA for HTLV-III/LAV antibody in women who have no clinical or laboratory evidence of HTLV-III/LAV infection is evidence that they have probably not been infected. However, uninfected women who have sex partners with evidence of HTLV-III/LAV infection or with an increased risk of becoming infected should be informed that sexual intercourse increases their risk of infection. These women should be informed of the risks associated with pregnancy if they become infected and advised to consider delaying pregnancy until more is known about perinatal transmission of the virus or until they are no longer considered to be at risk for acquiring the virus. In addition to preventing pregnancy, the consistent and proper use of condoms can offer some protection against HTLV-III/LAV infection.

High-risk women, even if seronegative, should be told not to donate blood or organs. To decrease their risk of becoming infected, IV drug abusers should be encouraged to seek treatment for their drug abuse. Persons counselling IV drug abusers should know that IV drug abuse is often strongly ingrained and compulsive. Despite educational efforts and encouragement for treatment, some addicts will continue to abuse drugs or relapse after treatment. If drug abuse continues, they should be advised not to share needles or syringes and to use only sterile equipment.

Additional Considerations. These recommendations will be revised as additional information becomes available. It is recognized that provision of the recommended professional counselling, HTLV-III/LAV-antibody testing and associated specialized medical services will take time to implement and may stress available resources, particularly in public facilities, which are most greatly affected. Health-care providers, social-service personnel, and others involved in educating and caring for HTLV-III/LAV-infected persons should be aware of the potential for social isolation and should be sensitive to the need for confidentiality. They should be familiar with federal and state laws, regulations, and policies that protect the confidentiality of clinical data and test results. Each institution should assure that specific mechanisms are in place to protect the confidentiality of all records and to prevent the misuse of information. Anonymous testing would not be appropriate if it prevents adequate counselling and medical follow-up evaluation.

Hospital precautions for managing infected women and infants should be patterned after those for caring for patients with HTLV-III/LAV infection (*27,28*). Additional recommendations will follow.

DEVELOPMENT OF THESE RECOMMENDATIONS

The information and recommendations contained in this document were developed and compiled by CDC and the U.S. Public Health Service in consultation with individuals representing: the Conference of State and Territorial Epidemiologists, the Association of State and Territorial Health Officials, the American Public Health Association, the United States Conference of Local Health Officers, the American Medical Association, the American College of Obstetricians and Gynecologists, the American Academy of Pediatrics, the Planned Parenthood Federation of America, the American Venereal Disease Association, the Division of Maternal and Child Health of the Health Resources and Services Administration, the National Institute on Drug Abuse of the Alcohol, Drug Abuse, and Mental Health Administration, the National Hemophilia Foundation, the Haitian Medical Association, the American Bar Foundation, and the Kennedy Institute of Ethics at Georgetown University. The consultants also included representatives of the departments of health of the areas with the largest number of perinatally transmitted pediatric AIDS cases: New York City, Florida, and New Jersey. These recommendations may not reflect the views of all individual consultants or the organizations they represented.

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Seventh National Lesbian/Gay Health Conference; Fourth National AIDS Forum

The Seventh National Lesbian/Gay Health Conference and Fourth National AIDS Forum will be held March 13-16, 1986, at George Washington University, Washington, D.C., sponsored by the National Lesbian and Gay Health Foundation, Inc.; CDC; the National Institute of Allergy and Infectious Diseases, the National Institute on Alcohol Abuse and Alcoholism, the National Institute on Drug Abuse, the National Institute of Mental Health, National Institutes of Health; Alcohol, Drug Abuse, and Mental Health Administration; George Washington University Medical School; the Center for Interdisciplinary Studies of Immunology at Georgetown University; Addiction Recovery Corporation; the Washington, D.C., AIDS Task Force; and the Whitman-Walker Clinic, Washington, D.C.

The purpose of the meeting is to discuss developments in health-care delivery to lesbians and homosexual men; discussions will include acquired immunodeficiency syndrome (AIDS), addiction, and general lesbian and homosexual health concerns. Scientific papers and workshop proposals are now being solicited. For further information and future announcements, contact: NLGHF Conference, P.O. Box 65472, Washington, D.C., 20035; telephone (202) 797-3708.

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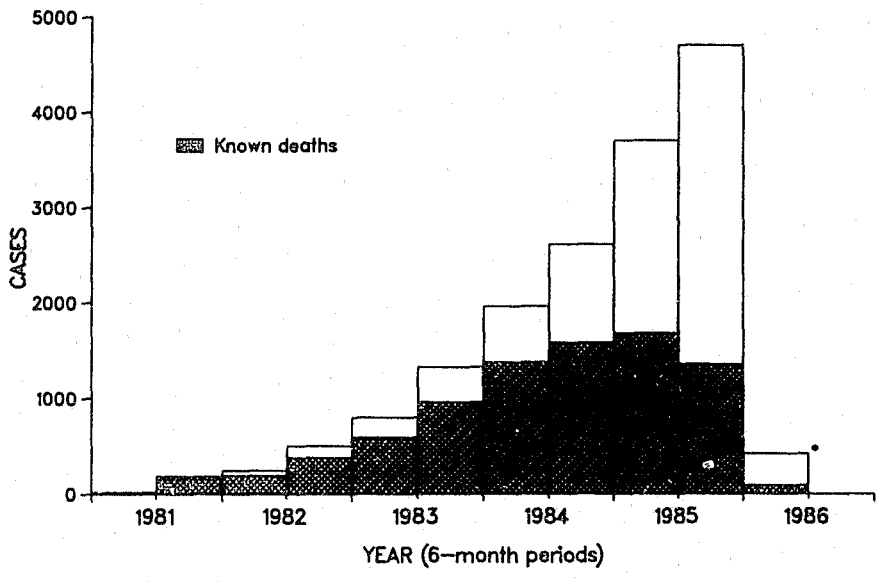
Update: Acquired Immunodeficiency Syndrome — United States

Between June 1, 1981, and January 13, 1986, physicians and health departments in the United States notified CDC of 16,458 patients (16,227 adults and 231 children) meeting the acquired immunodeficiency syndrome (AIDS) case definition for national reporting (*1-3*). Of these, 8,361 (51% of the adults and 59% of the children) are reported to have died, including 71% of patients diagnosed before July 1984. The number of cases reported each 6-month period continues to increase (Figure 1), although not exponentially, as evidenced by the lengthening case-doubling times (Table 1). Cases have been reported from all 50 states, the District of Columbia, and three U.S. territories.

Adult patients. Among adult AIDS patients, 60% were white; 25%, black; and 14%, Hispanic. Ninety percent were 20-49 years old, and 93% were men. Although the race, age, and sex distribution of adult AIDS patients has remained relatively constant over time, significant changes have occurred in the distribution of specific diseases reported. *Pneumocystis carinii* pneumonia (PCP) continues to be the most common opportunistic infection reported among AIDS patients, accounting for 43% of reported opportunistic diseases; incidence of PCP continues to increase relative to other reported opportunistic diseases among AIDS patients ($p < 0.0001$). PCP accounted for 35% of the diagnosed AIDS-associated diseases before January 1984 and 47% of those diagnosed from January 1985 to December 1985. The increase in PCP was associated with a decrease in Kaposi's sarcoma (KS), the second most common AIDS-associated opportunistic disease. Before December 1984, KS accounted for 21% of reported diagnoses; between January 1985 and December 1985, KS accounted for 13% of reported diagnoses. Among all AIDS patients, 63% have been diagnosed with PCP; 24%, with KS; 14%, with candida esophagitis; 7%, with cytomegalovirus (CMV) infections; 7%, with cryptococcosis; 4%, with chronic herpes simplex; 4%, with cryptosporidiosis; 3%, with toxoplasmosis; and 3%, with other opportunistic diseases only. These values tend to

FIGURE 1. Acquired immunodeficiency syndrome cases and known deaths, by 6-month period of report to CDC — United States, through January 13, 1986



*Data incomplete.

TABLE 1. Acquired immunodeficiency syndrome cases, by date of report and doubling time — United States, through January 13, 1986

Cumulative cases reported	Date	Doubling time (months)
129	September 1981	—
257	February 1982	5
514	July 1982	5
1,029	January 1983	6
2,057	August 1983	7
4,115	April 1984	8
8,229	February 1985	10
16,458	January 1986	11

underestimate the number of diseases diagnosed in a given patient, because health-care providers frequently do not provide follow-up information on diseases that occur after the case has initially been reported.

A total of 15,243 (94%) AIDS patients can be placed in groups* that suggest a possible means of disease acquisition: men with homosexual or bisexual orientation who have histories of using intravenous (IV) drugs (8% of cases); homosexual or bisexual men who are not known IV drug users (65%); heterosexual IV drug users (17%); persons with hemophilia (1%); heterosexual sex partners of persons with AIDS or at risk for AIDS (1%); and recipients of transfused blood or blood components (2%). The remaining 984 (6%) have not been classified by recognized risk factors for AIDS.

AIDS patients reported as not belonging to recognized risk groups are investigated by local health officials to determine if possible risk factors exist. Since 1981, 1,206 AIDS patients reported to CDC were initially identified on the original case report form as not belonging to a risk group. Of these individuals, 398 were from countries where heterosexual transmission may account for many AIDS cases. Of the remaining 808, information was incomplete on 178 patients due to: death (116), refusal to be interviewed (24), or loss to follow-up (38). Two hundred ninety-seven cases are still under investigation. Interviews or other follow-up information were available on the remaining 333 patients. Based on this information, risk factors were ultimately identified in 197 (59%) individuals; 25 (8%) were found not to meet the criteria of the surveillance definition for AIDS and no risk was identified on 111 (33%) AIDS patients. In interviews of the 111 patients for whom no risk was identified, 39 (35%) gave

*Patient groups are hierarchically ordered; patients with multiple risk factors are tabulated only in the group listed first.

histories of gonorrhea and/or syphilis, indicating that these AIDS patients were at risk for other sexually transmitted infections. Of 57 men interviewed, 15 (26%) gave histories of sexual contact with a female prostitute.

Reported cases have increased in all patient groups (Table 2). The relative proportion of AIDS cases among most risk groups has remained stable (Table 3). The proportion of AIDS cases associated with blood transfusions has increased from 1% to 2% ($p = 0.015$). Due to the long period between infection with human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) and development of AIDS, the impact of serologic screening of blood donations and deferral of those at increased risk cannot be expected to be reflected yet in national AIDS reporting. In the groups not classified by recognized risk factors, the proportion of AIDS patients born outside the United States has declined from 4% to 2% ($p < 0.0001$).

Pediatric patients. Among 231 AIDS patients under 13 years old, 19% were white; 60%, black; and 20%, Hispanic. Fifty-five percent were male. Fifty-eight percent were diagnosed with PCP; 19%, with disseminated CMV; 15%, with candida esophagitis; 6%, with cryptosporidiosis; 4%, with KS; and 22%, with other opportunistic diseases only. One hundred seventy-four (75%) pediatric patients came from families in which one or both parents had AIDS or were at increased risk for developing AIDS; 33 (14%) had received transfusions of blood or blood components before onset of illness, and 11 (5%) had hemophilia. Risk-factor information on the parents of the 13 (6%) remaining cases is incomplete. Although 57% of pediatric patients have been reported within the last year, 72% were actually diagnosed before 1985. Pediatric patients have been reported from 23 states, Washington, D.C., and Puerto Rico; cases reported per state ranged from one to 91 (median three). Seventy-five percent of the cases have been reported from New York, Florida, New Jersey, and California.

Reported by State and Territorial Epidemiologists; AIDS Program, Center for Infectious Diseases, CDC.

TABLE 2. Acquired immunodeficiency syndrome cases reported by year and yearly percent increases, by patient group — United States, through January 13, 1986

Patient group	Before 1/14/82 No.	1/14/82-1/13/83 No.	(% Inc)*	1/14/83-1/13/84 No.	(% Inc)*	1/14/84-1/13/85 No.	(% Inc)*	1/14/85-1/13/86 No.	(% Inc)*	Total
Adult										
Homosexual bisexual men and IV drug users	16	66	(312.5)	211	(219.7)	418	(98.1)	599	(43.3)	1,310
Homosexual bisexual men not IV drug users	178	473	(165.7)	1,341	(183.5)	2,939	(119.2)	5,669	(92.9)	10,600
IV drug users	22	138	(527.3)	392	(184.1)	785	(100.3)	1,429	(82.0)	2,766
Hemophilia patients	0	7	(0.0)	10	(42.9)	38	(280.0)	69	(81.6)	124
Heterosexual contacts	1	10	(900.0)	18	(80.0)	53	(194.4)	100	(88.7)	182
Transfusion recipients	0	6	(0.0)	28	(366.7)	56	(100.0)	171	(205.4)	261
None of the above other:										
No identified risks;	3	28	(833.3)	76	(171.4)	131	(72.4)	348	(165.6)	586
Born outside U.S.†	7	48	(585.7)	85	(77.1)	114	(34.1)	144	(26.3)	398
Subtotal	227	776	(241.9)	2,161	(178.5)	4,534	(109.8)	8,529	(88.1)	16,227
Pediatric	0	16	(0.0)	35	(118.8)	48	(37.1)	132	(175.0)	231
TOTAL	**227**	**792**	**(248.9)**	**2,196**	**(177.3)**	**4,582**	**(108.7)**	**8,661**	**(89.0)**	**16,458**

*Percent increase.

†Includes persons born in countries in which most AIDS cases have not been associated with known risk factors.

Editorial Note: The incidence of AIDS continues to increase. In 1982, 747 cases were reported; in 1983, 2,124 were reported (a 184% increase); in 1984, 4,569 were reported (a 115% increase); and in 1985, 8,406 were reported (an 84% increase). From analyses of past trends, further increases are expected for 1986; however, the percentage increase in 1986 is likely to be smaller than that noted in 1985.

The number of AIDS cases that have not been classified into previously identified risk groups is not increasing proportionately faster than the number of cases in identified risk groups. Past experience would suggest that many cases currently under investigation will be reclassified.

Currently reported AIDS cases have resulted from HTLV-III/LAV exposure up to 7 years before diagnosis (*4*); the possibility of longer incubation periods cannot be excluded. Since HTLV-III/LAV infection persists in an individual, persons previously infected continue to remain at risk for developing AIDS. Due to the long period between infection and development of

AIDS, transfusion-associated cases are expected to continue (*4*). However, voluntary donor deferral by those at increased risk for AIDS and serologic testing of donated blood and plasma for HTLV-III/LAV antibody—implemented in March 1983 and spring 1985, respectively—have greatly reduced the potential for HTLV-III/LAV transmission through transfusion (*4-6*).

The increase in previously diagnosed pediatric AIDS cases reported within the past year reflects improved reporting as well as inclusion in the case definition of histologically confirmed diagnoses of chronic lymphoid interstitial pneumonitis in children under 13 years of age (*3*). Since most pediatric AIDS cases result from perinatal transmission of HTLV-III/LAV, the race/ethnicity and geographic distribution of pediatric AIDS patients is similar to that of reported AIDS cases among adult females.

Planned prospective studies of incidence and prevalence of HTLV-III/LAV infection should determine whether current reports of patients meeting the AIDS case definition for national reporting accurately reflect the distribution of infected persons. Persons meeting the AIDS case definition are only a small percentage of all persons infected with HTLV-III/LAV (*7*). CDC uses the existing case definition for surveillance purposes, because other manifestations of HTLV-III/LAV infection are less specific and less likely to be consistently reported nationally.

TABLE 3. Distribution by patient group of reported acquired immunodeficiency syndrome cases, by date of report — United States, through January 13, 1986

Patient group	Before 1/14/84 No.	(%)	1/14/84-1/13/85 No.	(%)	1/14/85-1/13/86 No.	(%)	Total No.	(%)
Adult								
Homosexual/bisexual men and IV drug users	293	(9.3)	418	(9.2)	599	(7.0)	1,310	(8.1)
Homosexual/bisexual men not IV drug users	1,992	(63.0)	2,939	(64.8)	5,669	(66.5)	10,600	(65.3)
IV drug users	552	(17.4)	785	(17.3)	1,429	(16.8)	2,766	(17.0)
Hemophilia patients	17	(0.5)	38	(0.8)	69	(0.8)	124	(0.8)
Heterosexual contacts	29	(0.9)	53	(1.2)	100	(1.2)	182	(1.1)
Transfusion recipients	34	(1.1)	56	(1.2)	171	(2.0)	261	(1.6)
None of the above/other:								
No identified risks;	107	(3.4)	131	(2.9)	348	(4.1)	586	(3.6)
Born outside U.S.*	140	(4.4)	114	(2.5)	144	(1.7)	398	(2.5)
Subtotal	3,164	(100.0)	4,534	(100.0)	8,529	(100.0)	16,227	(100.0)
Pediatric								
Parent with AIDS or at increased risk for AIDS	38	(74.5)	40	(83.3)	97	(73.5)	175	(75.8)
Hemophilia patients	3	(5.9)	1	(2.1)	7	(5.3)	11	(4.8)
Transfusion recipients	6	(11.8)	6	(12.5)	21	(15.9)	33	(14.3)
None of the above/other	4	(7.8)	1	(2.1)	7	(5.3)	12	(5.2)
Subtotal	51	(100.0)	48	(100.0)	132	(100.0)	231	(100.0)
TOTAL	**3,215**	**(100.0)**	**4,582**	**(100.0)**	**8,661**	**(100.0)**	**16,458**	**(100.0)**

*Includes persons born in countries in which most AIDS cases have not been associated with known risk factors.

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1986 Jan 24;35:35–38, 43–6

Update: Acquired Immunodeficiency Syndrome — Europe

As of September 30, 1985, 1,573 cases of acquired immunodeficiency syndrome (AIDS) were reported to the World Health Organization (WHO) European Collaborating Centre on AIDS by the 21 countries corresponding with the Centre (Table 1). The new cases represent an average increase of 27 cases per week. Of the 1,573 patients, 792 are reported to have died (case-fatality rate: 50%) (Table 2, Figure 1).

The greatest increases in numbers of cases were observed in: the Federal Republic of Germany—75 (five to six per week); France—74 new cases (five to six per week); the United Kingdom—49 (three to four per week); and Italy—40 (three per week). In each of four countries (Belgium, Netherlands, Spain, and Switzerland), an increase of one to two cases per week was noted. Five countries (Czechoslovakia, Hungary, Iceland, Poland, the Union of Soviet Socialist Republics) had not reported any cases.

AIDS cases per million population were calculated using 1985 population estimates (Institut National d'Etudes Dêmographiques, Paris). The highest rates were noted in: Switzerland—11.8; Denmark—11.2; and France—8.5. These rates are low compared to the U.S. rate of 60.0 (*1*).

DISTRIBUTION BY DISEASE CATEGORY AND PATIENT SEX

A total of 1,025 patients (65%) presented with one or more opportunistic infections; 309 (20%) had Kaposi's sarcoma (KS) alone; and 212 (13%) had opportunistic infections with KS. The category "Other" (27 cases) includes four cases of progressive multifocal leukoencephalopathy (France—three; Denmark—one), six cases of isolated cerebral lymphoma (the United Kingdom—two; France—three, Switzerland—one), three cases of isolated Burkitt lymphomas of the brain (Denmark—one; the Federal Republic of Germany—two); 10 cases of B-cell non-Hodgkin's lymphomas (the Federal Republic of Germany—four; the Netherlands—three); and Luxembourg, Norway, and Switzerland—one each); and four unknown (Sweden). The highest case-fatality rate (59%) was noted for patients with both KS and opportunistic infections. The case-fatality rate for opportunistic infections alone was 56%; for KS alone, 25%.

Males accounted for 92% of the cases (Table 3). The male:female ratio was 11:1. Forty-two percent of cases occurred in the 30- to 39-year age group. Thirty-six pediatric cases (children under 15 years old) have been reported in 10 European countries. Twenty-four (67%) children either had parents with AIDS or parents in a group at high risk for AIDS; for 10 pediatric patients (five with hemophilia and five with blood transfusions), transmission was linked to contaminated blood or blood products. In two of the pediatric patients, no risk factor was reported.

DISTRIBUTION BY GEOGRAPHIC ORIGIN

Total cases were distributed geographically and by risk group as follows (Table 4):

Europeans* (1,330 cases [85% of total]). A total of 1,288 (97%) patients were living in Europe before onset of the first symptoms; 42 (3%) were living in non-European countries: United States—13; Zaire—12; Haiti—three; and one each in Bermuda, Brazil, Burundi, Congo, Gabon, Ghana, Malaysia, Morocco, Nicaragua, South Africa, Togo, and Venezuela; the country of residence was not specified for two patients.

Of the 1,330 European patients, 1,031 (78%) were homosexual or bisexual. Ninety (7%) patients were IV drug abusers, and 21 (2%), both homosexual and IV drug abusers. These 111 cases were diagnosed in: Italy—45; Spain—26, the Federal Republic of Germany—14; France—11; Switzerland—seven; Austria—four; the United Kingdom—three; and Sweden—one. Fifty-two (4%) of the reported patients had hemophilia and were diagnosed in: the Federal Republic of Germany—21; Spain—12; the United Kingdom—nine; France—three; Sweden—two; and one each in Austria, Denmark, Greece, Italy, and Norway. One German patient with hemophilia was reported as being homosexual and an IV drug abuser. Thirty (2%) patients, for whom the only risk factor found was blood transfusion, were diagnosed in: France—15; Belgium, the Netherlands, and the United Kingdom—four each; the Federal Republic of Germany—two; and Italy—one. Among these 30 cases, five had received blood transfusions outside Europe: one diagnosed in the Netherlands had undergone heart surgery in the United States; one diagnosed in France had received blood transfusions in Haiti and Martinique; and two diagnosed in Belgium had received transfusions in Zaire. One child diagnosed in the United Kingdom had received a blood transfusion in the United States. For 90 patients (7%), no risk factor was found (male:female ratio 2:1). Risk-factor information was not obtained for 16 patients.

*The word European refers to patients originating from one of the countries belonging to the WHO European region.

TABLE 1. Reported acquired immunodeficiency syndrome cases and estimated rates per million population — 21 European countries, October 1, 1984-September 30, 1985

Country	Oct. 1984	March 1985	June 1985	Sept. 1985	Rates*
Austria	-	13	18	23	3.1
Belgium	-	81	99	118	11.9
Czechoslovakia	0	0	0	0	0.0
Denmark	31	41	48	57	11.2
Federal Republic of Germany	110	162	220	295	4.8
Finland	4	5	6	10	2.0
France	221	307	392	466	8.5
Greece	2	7	9	10	1.0
Hungary	-	-	-	0	0.0
Iceland	0	0	0	0	0.0
Italy	10	22	52	92	1.6
Luxembourg	-	-	1	3	7.5
Netherlands	26	52	66	83	5.7
Norway	4	8	11	14	3.3
Poland	0	0	0	0	0.0
Spain	18	29	38	63	1.6
Sweden	12	22	27	36	4.3
Switzerland	33	51	63	77	11.8
United Kingdom	88	140	176	225	4.0
Union of Soviet Socialist Republics	-	-	-	0	0.0
Yugoslavia	-	-	-	1	-
Total	**559**	**940**	**1,226**	**1,573**	-

*Per million population based on 1985 populations.

TABLE 2. Acquired immunodeficiency syndrome cases and number of deaths, by disease category — 21 European countries,* through September 30, 1985

Disease category	Cases	(%)	Deaths	(%)
Opportunistic infection	1,025	(65)	575	(56)
Kaposi's sarcoma	309	(20)	77	(25)
Opportunistic infection and Kaposi's sarcoma	212	(13)	126	(59)
Other	27	(2)	14	(52)
Total	**1,573**	**(100)**	**792**	**(50)**

*Austria, Belgium, Czechoslovakia, Denmark, Finland, France, the Federal Republic of Germany, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Spain, Sweden, Switzerland, the United Kingdom, the Union of Soviet Socialist Republics, and Yugoslavia.

Caribbeans (39 [2%]). Thirty-seven patients were living in Europe before the onset of the first symptoms: 32 Haitians were diagnosed in France; one, in Belgium; and one, in Switzerland; one Dominican and one Jamaican were living in the United Kingdom; one patient of unspecified origin was living in Switzerland. Two Haitian patients diagnosed in France were living in Haiti.

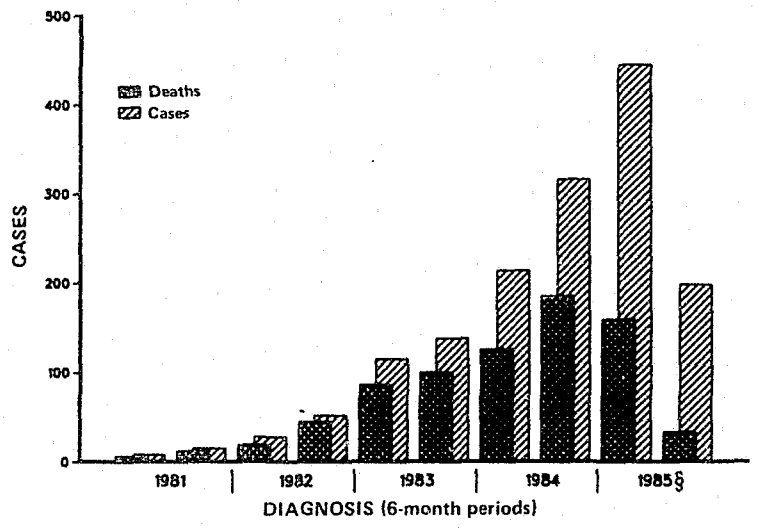
Of the Caribbean patients, four were homosexual, and no risk factors were identified for 34 (male:female ratio 3:1). Risk-factor information was not obtained in one case.

Africans (157 [10%]). These persons were diagnosed in eight European countries and originated from 22 African countries (63% from Zaire and 10% from the Congo). Among the remaining 20 countries, the number of cases varied from one to five. Eighty-six patients (55%) were living in Europe before onset of the first symptoms. Sixty-six resided in Africa, and one, in the United States. Two patients from Zaire and one each from Burundi and Rwanda were living in other parts of the world.

Of the 157 Africans, 11 were homosexuals; five had received blood transfusions; and one was both homosexual and an IV drug abuser. No risk factors were identified for 124 (male:female ratio 2:1); and for 16, information was not obtained.

Other origins (47 cases [3%]). Most of these patients originated from the American continents: the United States—23; Argentina—four; Brazil—three; and one each from Canada,

FIGURE 1. Acquired immunodeficiency syndrome cases and deaths, by 6-month period of diagnosis — 21 European countries,* January 1, 1981-September 30, 1985†



*Austria, Belgium, Czechoslovakia, Denmark, the Federal Republic of Germany, Finland, France, Greece, Hungary, Iceland, Italy, Luxembourg, the Netherlands, Norway, Poland, Spain, Sweden, Switzerland, the United Kingdom, the Union of Soviet Socialist Republics, and Yugoslavia.

†Before 1981, 21 cases, including 11 deaths, were reported. In addition, 23 cases (10 deaths) with unknown dates of diagnosis were also reported.

§January-September 1985.

TABLE 3. Acquired immunodeficiency syndrome cases, by age group and sex — 21 European countries, through September 30, 1985

Age group	Males	Females	Total No.	Total (%)
0-11 mos.	6	8	14	(0.9)
1-4 yrs.	9	6	15	(1.0)
5-9 yrs.	3	1	4	(0.3)
10-14 yrs.	3	0	3	(0.2)
15-19 yrs.	8	0	8	(0.5)
20-29 yrs.	277	57	334	(21.2)
30-39 yrs.	622	36	658	(41.8)
40-49 yrs.	375	12	387	(24.6)
50-59 yrs.	103	9	112	(7.1)
≥ 60 yrs.	21	4	25	(1.6)
Unknown	13	0	13	(0.8)
Total	**1,440**	**133**	**1,573**	**(100.0)**

TABLE 4. Acquired immunodeficiency syndrome cases, by patient risk group and geographic origin — 21 European countries, through September 30, 1985

Patient risk group	Origin: Europe	Origin: Caribbean Islands	Origin: Africa	Origin: Other	Total No.	Total (%)
1 Male homosexual or bisexual	1,031	4	11	39	1,085	(69)
2. IV drug abuser	90	-	-	-	90	(6)
3. Hemophilia patient	52	-	-	1	53	(3)
4. Transfusion recipient (without other risk factors)	30	-	5	-	35	(2)
5. 1- and 2-associated	21	-	1	2	24	(2)
6. No known risk factor						
Male	59	24	81	3	167	(11)
Female	31	10	43	-	84	(5)
7. Unknown	16	1	16	2	35	(2)
Total	**1,330 (85%)**	**39 (2%)**	**157 (10%)**	**47 (3%)**	**1,573**	**(100)**

Chili, Nicaragua, Peru, and Uruguay. One patient each originated from Australia, Egypt, Lebanon, New Zealand, Pakistan, Thailand, and Turkey; the origins of four were unknown. Fourteen of these patients were not living in Europe before the onset of the first symptoms (the United States—10; Canada and Africa—one each; unknown—two).

Among the 47 patients, 39 were homosexual; two were both homosexual and IV drug abusers (one Canadian diagnosed in the United Kingdom and one American diagnosed in Spain). One American diagnosed in Sweden had hemophilia. Two did not present any risk factors. Information was not obtained in three cases.

DISTRIBUTION BY RISK GROUP

It is not possible to compare precisely the situations in the various European countries because of differences that may exist in the methods of data collection. Furthermore, in countries where AIDS is still rare, distribution may be modified with the increase in number of cases. However, some observations can be made:

Male homosexuals. AIDS patients belonging to this risk group accounted for 60%-100% of the total number of cases in 12 of 16 countries. In four other countries (Belgium, Greece, Italy, and Spain), male homosexuals accounted for fewer than 50% of cases.

IV drug abusers. The spread of AIDS in Europe has been particularly marked in this group. In October 1984, IV drug abusers represented only 2% of the total number of European cases and were reported by three countries. By September 30, 1985, they represented 8% of all European cases and were reported by nine countries, a significant increase ($p < 0.001$). Italy and Spain together accounted for 63% of the IV drug abusers with AIDS in Europe. Forty-five (49%) of the 92 Italian patients and 23 (37%) of the 63 Spanish patients were members of this risk group.

Cases related to transfusion of blood and blood products. Ten countries have reported AIDS among hemophilia patients, and six have reported cases among blood transfusion recipients.

Patients not belonging to any of the above risk groups. This group contributed the second largest number of cases. In four countries (Belgium, France, Greece, and Switzerland), a high proportion of patients originated from regions where most AIDS patients have not belonged to any of the above risk groups but where heterosexual transmission is thought to be a major factor. In Belgium, 72% of the patients originated from equatorial Africa; in France, 11% originated from the same region, and 8% from Haiti; in Switzerland, 12% originated from equatorial Africa).

REVIEW OF PUBLIC HEALTH MEASURES RELATED TO BLOOD DONORS

A questionnaire on public health measures related to blood transfusion was sent to the 21 European countries corresponding with the Centre and to Portugal. Except for the Union of Soviet Socialist Republics, all the countries answered this questionnaire.

Systematic screening of blood donors for lymphadenopathy-associated virus/human T-lymphotropic virus type III (LAV/HTLV-III) antibodies became effective in 16 of 21 countries between June and November 1985. In 13 countries, the screening is compulsory. In three others (Italy, the Netherlands, and Sweden), this screening is recommended rather than compulsory, but the public health authorities of these countries consider that the recommendation is followed and all blood donations are tested.

The test used in these countries is the enzyme-linked immunosorbent assay (ELISA). The follow-up tests used are mainly a second ELISA with an immunoblot (Western blot) or immunofluorescence test. Portugal is the only country that does not yet use a follow-up test. The follow-up test is recommended in six countries (Denmark, Greece, Italy, the Netherlands, Sweden, and Switzerland). In the other nine countries, the follow-up test is compulsory.

Among the 16 countries that have taken measures related to blood donors, only Portugal has organized a national register of seropositive blood donors for whom confidentiality has been ensured. A national register is under consideration in Norway.

Specialized consultations for the follow-up of seropositive subjects are organized or are being organized in 11 of 16 countries (Austria, Belgium, Denmark, the Federal Republic of Germany, France, Italy, Luxembourg, Norway, Sweden, Switzerland, and the United Kingdom). In Finland, seropositive subjects are followed up by their usual physicians. Specialized consultations are under consideration in four countries (Greece, Hungary, the Netherlands, Portugal).

Information for seropositive subjects is systematic in five of 16 countries (Denmark, Finland, Greece, the Netherlands, and Switzerland) and recommended in 10 countries (Austria, Belgium, the Federal Republic of Germany, France, Hungary, Italy, Luxembourg, Norway, Sweden, and the United Kingdom). No official recommendation concerning information to seropositive subjects has been made in Portugal. Systematic screening of blood donors is under consideration in five countries (Czechoslovakia, Iceland, Poland, Spain, and Yugoslavia).

Eighteen countries have a national reference center for confirmation. Luxembourg is, and Iceland will be, using a reference center in a neighboring country. Portugal has not made a decision on this subject yet.

Measures to exclude donors at risk have been taken in all the countries except Czechoslovakia, Finland, and Portugal. These measures were initiated in 1983 for seven countries (Belgium, Denmark, France, the Netherlands, Norway, Sweden, and the United Kingdom); in 1984 for Luxembourg; in 1985 for Austria, Greece, Iceland, Italy, Poland, Spain, and Yugoslavia. No date was given for Hungary.

EDITORIAL COMMENTS BY THE WHO CENTRE

Prevention of AIDS transmission through blood transfusion is now effective in most European countries due to systematic screening for LAV/HTLV-III antibodies in blood donors. Even in countries where no cases of AIDS have been officially reported, the establishment of screening programs is being studied; in Hungary, screening is already compulsory.

As in the United States, male homosexuals account for the highest percentage of the total number of cases (69%). The distribution by risk group shows a marked increase in cases among drug abusers, accounting for 2% of 421 European cases by July 1984, and 8% of the 1,573 cases reported by September 1985. Over 40% of the cases in Italy and Spain occurred in this group. Several 1985 studies in various European countries showed a high frequency (20%-50%) of serologic markers of infection with LAV/HTLV-III in IV drug abusers, indicating that the spread of the infection has been rapid in this population. Information campaigns that are being set up should emphasize this aspect of the spread of AIDS.

Surveillance of AIDS in Europe was set up progressively in 1982; case-fatality rates obtained before 1982 cannot be included in the present surveillance data because of an unknown proportion of patients lost to follow-up.

The Centre uses the CDC case definition. One source per country, recognized by the respective national health authorities, provides the information. The national data are noted on standard tables, and each source is responsible for the quality of the data provided. Hungary, the Union of Soviet Socialist Republics, and Yugoslavia now also collaborate with the Centre.

The number of cases diagnosed between January and September 1985 must be considered as provisional because of the time required for reports to reach national surveillance centers.

Reported by JB Brunet, MD, R Ancelle, MD, Institut de Médecine et d'Épidémiologie Africaines et Tropicales (WHO Collaborating Centre on AIDS), Paris, France; Federal Ministry of Health and Environmental Protection, Vienna, Austria; Conseil Supérieur de l'Hygiène Publique, Ministère de la Santé, Brussels, Belgium; Institute of Virology, Bratislava, Czechoslovakia; Statens Serum Institute, Copenhagen, Denmark; Institute of Biomedical Sciences, Tampere, Finland; Direction Générale de la Santé, Paris, France; Robert Koch Institute, West Berlin, Federal Republic of Germany; Ministry of Health, Athens, Greece; National Institute of Hygiene, Budapest, Hungary; General Direction of Public Health, Reykjavik, Iceland; Instituto Superiore di Sanita, Rome, Italy; Ministère de la Santé, Luxembourg, Luxembourg; Staatstoezicht op de Volksgezondheid, Leidfehendam, Netherlands; National Institute of Public Health, Oslo, Norway; National Institute of Hygiene, Warsaw, Poland; Ministerio de Sanidad y Consumo, Madrid, Spain; National Bacteriological Laboratory, Stockholm, Sweden; Office Federale de la Santé Publique, Berne, Switzerland; Communicable Disease Surveillance Centre, London, United Kingdom; Ministry of Public Health, Moscow, Union of Soviet Socialist Republics; Federal Institute of Public Health, Belgrade, Yugoslavia.

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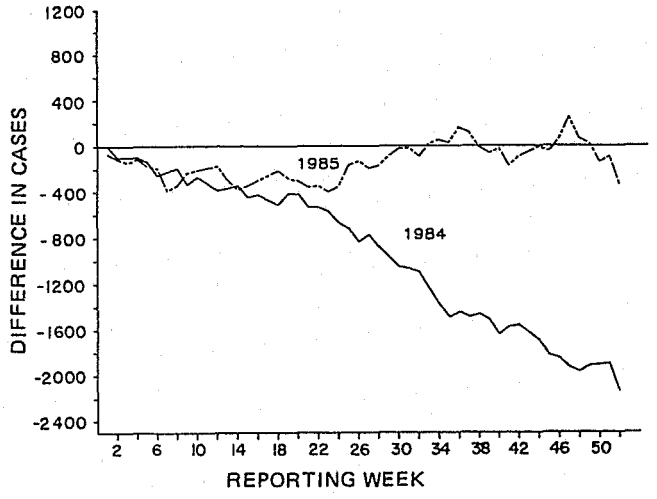
1986 Feb 7;35:74–6

Tuberculosis — United States, 1985 — and the Possible Impact of Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus Infection

In 1985, a provisional total of 21,801 tuberculosis cases was reported to CDC, a 2.0% decline from the 1984 final total of 22,255 cases. Similarly, in 1985, the provisional incidence rate was 9.1 per 100,000 population, a decline of 3.2% from the 1984 final rate of 9.4/100,000. Compared with 1983, the number of reported cases in 1984 declined progressively, so that by week 52, there were 2,139 fewer cumulative provisional reported cases (Figure 5). Compared with 1984, there was no such progressive decline in 1985.

Reported by Div of Tuberculosis Control, Center for Prevention Svcs, CDC.

FIGURE 5. Difference in cumulative tuberculosis cases between 1984 and 1983 and between 1985 and 1984, by *MMWR* reporting week — United States



Editorial Note: From 1975 through 1978, the average annual decrease in reported tuberculosis cases was 5.7%. From 1978 through 1981, when there was a large influx of Southeast Asian refugees, the average decline was only 1.4%. The average decline of 6.7% from 1982 through 1984 indicated that the previous downward trend had resumed. The 2.0% decline in 1985 thus represents another slowing of this trend.

Although the reasons for the relatively small decline in 1985 cases are not fully known, evidence supports the hypothesis that human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) infection of persons infected with the tubercle bacillus has caused an increase in tuberculosis in some areas.

The suspicion that HTLV-III/LAV infection may be responsible for increased tuberculosis morbidity is based on the following:

1. Since other immunosuppressive disorders are associated with an increased risk of developing clinically apparent tuberculosis (*1,2*), there is a theoretical reason to believe that compromised immunity secondary to HTLV-III/LAV infection may favor activation of preexisting latent *Mycobacterium tuberculosis* infection.
2. Some of the areas with the largest tuberculosis morbidity increases this year (New York City, California, Florida, Texas) are also some of the areas that have reported the largest number of acquired immunodeficiency syndrome (AIDS) cases to date (*3*).
3. Data from New York City indicate that increased tuberculosis morbidity is occurring in areas of the city where most AIDS cases have occurred. Matching the New York City tuberculosis and AIDS case registers has revealed increasing numbers of AIDS patients with histories of tuberculosis. An increasing number of persons with histories of intravenous drug abuse—a known risk factor for AIDS—have been diagnosed as having tuberculosis (*4*).
4. In Dade County, Florida, a substantial number of persons with AIDS either had tuberculosis at the time AIDS was diagnosed or had it within the 18 months preceding the AIDS diagnosis (*5*). Based on an analysis currently in progress, 109 (10.0%) of the 1,094 AIDS patients reported to CDC from Florida through December 31, 1985, have also been diagnosed with tuberculosis.

To better understand the problem and to design the most effective and efficient program strategies, it will be essential to establish as soon as possible: (1) the proportion of tuberculosis patients who also have AIDS; (2) the proportion of specific subpopulations with tuberculosis that have HTLV-III/LAV infection; (3) the proportion of AIDS patients who have had tuberculosis diagnosed; (4) the relative risk among persons with both tuberculosis infection and HTLV-III/LAV infection of developing clinical tuberculosis, compared with suitable controls with tuberculous infection; (5) whether patients with HTLV-III/LAV infection and tuberculosis are more or less likely to transmit tuberculosis infection to others; (6) the validity of tuberculin skin-test results for persons with AIDS or HTLV-III/LAV infection; and (7) the efficacy of current treatment regimens among patients with HTLV-III/LAV infection and tuberculosis.

CDC's Division of Tuberculosis Control, Center for Prevention Services, is working closely with the Florida and Dade County health departments and the New York City Department of Health in designing and conducting studies to obtain answers to these questions.

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1986 Feb 7;35:76–9

Apparent Transmission of Human T-Lymphotrophic Virus Type III/ Lymphadenopathy-Associated Virus from a Child to a Mother Providing Health Care

CDC has received a report from state and local health officials of a child with transfusion-associated infection caused by human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the virus that causes acquired immunodeficiency syndrome (AIDS). The child's mother appears to have been infected with HTLV-III/LAV while providing nursing care that involved extensive unprotected exposure to the child's blood and body secretions and excretions.

The child, a 24-month-old male, was diagnosed as having a congenital intestinal abnormality on day 4 of life. Over the next several months, he had numerous surgical procedures, including colonic and ileal resections, repairs of ostomies, a liver biopsy, and intravascular catheter replacements. The child has been hospitalized 17 months and has required intravenous hyperalimentation and continuous nasogastric feedings throughout his life. His illness was also characterized by frequent bouts of bacterial sepsis, many of which were apparently related to his gastrointestinal disease and indwelling intravascular catheter. Because of anemia due to chronic illness, multiple surgical procedures, gastrointestinal bleeding, and frequent blood drawing, the child required multiple transfusions between birth (February 1984) and early June 1985.

Because of the child's history of both recurrent bacterial sepsis and multiple transfusions, a blood sample was drawn for HTLV-III/LAV antibody in May 1985. This sample, and a second sample obtained 3 months later, were both positive by enzyme immunoassay (EIA); the second sample was tested by Western blot assay and was positive. In June 1985, the ratio of T-helper to T-suppressor lymphocytes (T_H/T_S) was normal (1.6). Serum obtained during an investigation in December 1985 was strongly positive for antibody to HTLV-III/LAV by EIA (absorbance > 2.0, negative cutoff = 0.083, absorbance ratio > 24). Western blot assay at CDC was positive for both the p24 and gp41 bands.* Cultures of the child's peripheral blood lymphocytes, saliva, and stools for HTLV-III/LAV have been negative.

Blood from 26 donors had been transfused to the child between birth and June 1985. One of these donors was a 34-year-old female whose serum, obtained in January 1986, was strongly positive for antibody to HTLV-III/LAV by both EIA (absorbance ratio > 20) and Western blot assay (positive gp41 and equivocal p24 bands).* Her blood was transfused to the child in May 1984 before serologic testing of donors for HTLV-III/LAV was available. All other donors were seronegative.

The child's 32-year-old mother has been closely involved in the child's care during hospitalization and at home, which has required frequent contact with the child's blood and with other body fluids. Her activities included drawing blood through the child's indwelling catheter at least weekly, removing peripheral intravenous lines occasionally, emptying and changing ostomy bags daily for the 7 months these were in place, inserting rectal tubes daily to facilitate large-bowel clearing, changing diapers and surgical dressings, and changing nasogastric feeding tubes weekly. When interviewed, she did not recall any specific incidents of needlesticks or other parenteral exposures to the child's blood. However, the mother did not wear

*Results confirmed by competitive EIA for HTLV-III antibody performed by the Laboratory of Tumor Cell Biology, National Cancer Institute.

gloves, and on numerous occasions, her hands became contaminated with blood, feces (which often contained blood), saliva, and nasal secretions. She did not recall having open cuts or an exudative dermatitis on her hands; however, she often did not wash her hands immediately after blood or secretion contact.

In March, June, and October 1985, the mother donated blood; none of her donated blood was given to her child. As part of routine blood-donor screening, the blood was tested for HTLV-III/LAV antibody. She was seronegative by EIA in March and June. In October, a serum sample was repeatedly positive by EIA and was confirmed by Western blot assay. Serum obtained during an investigation in December 1985, and the October 1985 specimen, were both strongly positive by EIA (absorbance ratio > 24) and Western blot assay (positive p24 and gp41 bands) at CDC.* The mother remains clinically well; however, her T_H/T_S ratio was 0.9 (normal > 1.0) when tested in December 1985. Culture of her peripheral blood lymphocytes for HTLV-III/LAV was negative.

Extensive epidemiologic investigations did not reveal any other risk factors for infection in the mother or child. The mother was employed as a paramedic before the child's birth but denied needlestick injuries or exposure to AIDS patients. The child's father is negative for HTLV-III/LAV antibody* and is clinically well with a normal T_H/T_S ratio of 2.4.

Reported by AIDS Program, Center for Infectious Diseases, CDC.

Editorial Note: The child reported here most likely acquired the infection from transfusion of blood donated in May 1984 by a donor later found to be seropositive. The child's mother most likely acquired HTLV-III/LAV infection from her son while providing nursing care that involved extensive contact with his blood and other body secretions and excretions. She did not take precautions, such as wearing gloves, and often failed to wash her hands immediately after exposure.

Epidemiologic investigations did not reveal other risk factors for HTLV-III/LAV infection in the mother. The timing of her seroconversion (between June and October 1985) suggests that her exposure occurred after the birth of her child (February 1984). Limited case reports suggest that the seroconversion period for HTLV-III/LAV is approximately 1-6 months (*1-3*); there are no published reports of seroconversion periods greater than 6 months. Although initial attempts at virus isolation from the mother and child have been negative, the EIAs have been repeatedly reactive from multiple specimens in separate laboratories. The high absorbance ratios and presence of strong bands reacting to specific viral proteins on Western blot assay are most consistent with HTLV-III/LAV infection.

Previous CDC guidelines have emphasized that in hospital, institutional, and home-care settings, health-care workers or other persons providing care for patients with HTLV-III/LAV infection should wear gloves routinely during direct contact with the mucous membranes or nonintact skin of such patients (*4*). They should also wear gloves when handling items soiled with blood or other body secretions or excretions. Additional precautions, such as wearing gowns, masks, or eye coverings, may be appropriate if procedures involving more extensive contact with blood or other body secretions or excretions are performed. Education and foster care of children infected with HTLV-III/LAV, such as the child reported here, who lack control of their body secretions or excretions require special considerations as outlined previously (*5*).

Transmission of HTLV-III/LAV infection from child to parent has not been previously reported. The contact between the reported mother and child is not typical of the usual contact that could be expected in a family setting. None of the family members of the over 17,000 AIDS patients reported to CDC have been reported to have AIDS, except a small number of sexual partners of patients; children born to infected mothers; or family members who themselves had other established risk factors for AIDS. Seven studies involving over 350 family members of both adults and children with AIDS have not found serologic or virologic evidence of transmission of HTLV-III/LAV infection within families other than among sex partners, children born to infected mothers, or family members with risk factors for AIDS (*6-12*).

Although transmission of HTLV-III/LAV in the health-care setting has been reported, such transmission has been extremely rare. In five separate studies, a total of 1,498 health-care workers have been tested for antibody to HTLV-III/LAV. In these studies, 666 (44.5%) of the workers had direct parenteral (needlestick or cut) or mucous-membrane exposure to patients with AIDS or HTLV-III/LAV infection. Twenty-six persons in these five studies were seropositive when first tested; all but three of these persons belonged to groups recognized to be at increased risk for AIDS (*13-17*).

CDC is aware of only one other case in which HTLV-III/LAV transmission from a patient to a person providing care may have occurred through a nonparenteral route (*18*). In this report

from England, a 44-year-old woman, who was not a health-care worker, developed AIDS after she had provided home nursing care for a Ghanaian man who was diagnosed with AIDS at postmortem examination. The care involved prolonged and frequent skin contact with body secretions and excretions. The woman recalled having some small cuts on her hands and an exacerbation of chronic eczema. She denied any sexual contact with the patient.

The occurrences of the case reported here and the English case suggest that HTLV-III/LAV infection may, on rare occasions, be transmitted during unprotected contact with blood or other potentially infectious body secretions or excretions in the absence of known parenteral or sexual exposure to these fluids. Adherence to published guidelines for health-care workers (*4*) should prevent transmission through exposure to blood or body fluids.

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Additional Recommendations to Reduce Sexual and Drug Abuse-Related Transmission of Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus

BACKGROUND

Human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), the virus that causes acquired immunodeficiency syndrome (AIDS), is transmitted through sexual contact, parenteral exposure to infected blood or blood components, and perinatally from mother to fetus or neonate. In the United States, over 73% of adult AIDS patients are homosexual or bisexual men; 11% of these males also had a history of intravenous (IV) drug abuse. Seventeen percent of all adult AIDS patients were heterosexual men or women who abused IV drugs (*1,2*). The prevalence of HTLV-III/LAV antibody is high in certain risk groups in the United States (*3,4*).

Since a large proportion of seropositive asymptomatic persons have been shown to be viremic (*5*), all seropositive individuals, whether symptomatic or not, must be presumed capable of transmitting this infection. A repeatedly reactive serologic test for HTLV-III/LAV has important medical, as well as public health, implications for the individual and his/her health-care provider. The purpose of these recommendations is to suggest ways to facilitate identification of seropositive asymptomatic persons, both for medical evaluation and for counseling to prevent transmission.

Previous U.S. Public Health Service recommendations pertaining to sexual, IV drug abuse, and perinatal transmission of HTLV-III/LAV have been published (*6-8*). Reduction of sexual and IV transmission of HTLV-III/LAV should be enhanced by using available serologic tests to give asymptomatic, infected individuals in high-risk groups the opportunity to know their status so they can take appropriate steps to prevent the further transmission of this virus.

Since the objective of these additional recommendations is to help interrupt transmission by encouraging testing and counseling among persons in high-risk groups, careful attention must be paid to maintaining confidentiality and to protecting records from any unauthorized disclosure. The ability of health departments to assure confidentiality—and the public confidence in that ability—are crucial to efforts to increase the number of persons requesting such testing and counseling. Without appropriate confidentiality protection, anonymous testing should be considered. Persons tested anonymously would still be offered medical evaluation and counseling.

PERSONS AT INCREASED RISK OF HTLV-III/LAV INFECTION

Persons at increased risk of HTLV-III/LAV infection include: (1) homosexual and bisexual men; (2) present or past IV drug abusers; (3) persons with clinical or laboratory evidence of infection, such as those with signs or symptoms compatible with AIDS or AIDS-related complex (ARC); (4) persons born in countries where heterosexual transmission is thought to play a major role*; (5) male or female prostitutes and their sex partners; (6) sex partners of infected persons or persons at increased risk; (7) all persons with hemophilia who have received clotting-factor products; and (8) newborn infants of high-risk or infected mothers.

RECOMMENDATIONS

1. Community health education programs should be aimed at members of high-risk groups to: (a) increase knowledge of AIDS; (b) facilitate behavioral changes to reduce risks of HTLV-III/LAV infection; and (c) encourage voluntary testing and counseling.
2. Counseling and voluntary serologic testing for HTLV-III/LAV should be routinely offered to all persons at increased risk when they present to health-care settings. Such facilities include, but are not limited to, sexually transmitted disease clinics, clinics for treating parenteral drug abusers, and clinics for examining prostitutes.
   a. Persons with a repeatedly reactive test result (see section on Test Interpretation) should receive a thorough medical evaluation, which may include history, physical examination, and appropriate laboratory studies.
   b. High-risk persons with a negative test result should be counseled to reduce their risk of becoming infected by:
      (1) Reducing the number of sex partners. A stable, mutually monogamous relationship

*e.g., Haiti, Central African countries.

with an uninfected person eliminates any new risk of sexually transmitted HTLV-III/LAV infection.

(2) Protecting themselves during sexual activity with any possibly infected person by taking appropriate precautions to prevent contact with the person's blood, semen, urine, feces, saliva, cervical secretions, or vaginal secretions. Although the efficacy of condoms in preventing infections with HTLV-III/LAV is still under study, consistent use of condoms should reduce transmission of HTLV-III/LAV by preventing exposure to semen and infected lymphocytes (*9,10*).

(3) For IV drug abusers, enrolling or continuing in programs to eliminate abuse of IV substances. Needles, other apparatus, and drugs must never be shared.

c. Infected persons should be counseled to prevent the further transmission of HTLV-III/LAV by:

(1) Informing prospective sex partners of his/her infection with HTLV-III/LAV, so they can take appropriate precautions. Clearly, abstention from sexual activity with another person is one option that would eliminate any risk of sexually transmitted HTLV-III/LAV infection.

(2) Protecting a partner during any sexual activity by taking appropriate precautions to prevent that individual from coming into contact with the infected person's blood, semen, urine, feces, saliva, cervical secretions, or vaginal secretions. Although the efficacy of using condoms to prevent infections with HTLV-III/LAV is still under study, consistent use of condoms should reduce transmission of HTLV-III/LAV by preventing exposure to semen and infected lymphocytes (*9,10*).

(3) Informing previous sex partners and any persons with whom needles were shared of their potential exposure to HTLV-III/LAV and encouraging them to seek counseling/testing.

(4) For IV drug abusers, enrolling or continuing in programs to eliminate abuse of IV substances. Needles, other apparatus, and drugs must never be shared.

(5) Not sharing toothbrushes, razors, or other items that could become contaminated with blood.

(6) Refraining from donating blood, plasma, body organs, other tissue, or semen.

(7) Avoiding pregnancy until more is known about the risks of transmitting HTLV-III/LAV from mother to fetus or newborn (*8*).

(8) Cleaning and disinfecting surfaces on which blood or other body fluids have spilled, in accordance with previous recommendations (*2*).

(9) Informing physicians, dentists, and other appropriate health professionals of his/her antibody status when seeking medical care so that the patient can be appropriately evaluated.

3. Infected patients should be encouraged to refer sex partners or persons with whom they have shared needles to their health-care provider for evaluation and/or testing. If patients prefer, trained health department professionals should be made available to assist in notifying their partners and counseling them regarding evaluation and/or testing.
4. Persons with a negative test result should be counseled regarding their need for continued evaluation to monitor their infection status if they continue high-risk behavior (*8*).
5. State and local health officials should evaluate the implications of requiring the reporting of repeatedly reactive HTLV-III/LAV antibody test results to the state health department.
6. State or local action is appropriate on public health grounds to regulate or close establishments where there is evidence that they facilitate high-risk behaviors, such as anonymous sexual contacts and/or intercourse with multiple partners or IV drug abuse (e.g., bathhouses, houses of prostitution, "shooting galleries").

TEST INTERPRETATION

Commercially available tests to detect antibody to HTLV-III/LAV are enzyme-linked immunosorbant assays (ELISAs) using antigens derived from disrupted HTLV-III/LAV. When the ELISA is reactive on initial testing, it is standard procedure to repeat the test on the same specimen. Repeatedly reactive tests are highly sensitive and specific for HTLV-III/LAV antibody. However, since falsely positive tests occur, and the implications of a positive test are serious, additional more specific tests (e.g., Western blot, immunofluorescent assay, etc.) are recommended following repeatedly reactive ELISA results, especially in low-prevalence populations. If additional more specific test results are not readily available, persons in high-risk groups with strong repeatedly reactive ELISA results can be counseled before any additional

test results are received regarding their probable infection status, their need for medical follow-up, and ways to reduce further transmission of HTLV-III/LAV.

OTHER CONSIDERATIONS

State or local policies governing informing and counseling sex partners and those who share needles with persons who are HTLV-III/LAV-antibody positive will vary, depending on state and local statutes that authorize such actions. Accomplishing the objective of interrupting transmission by encouraging testing and counseling among persons in high-risk groups will depend heavily on health officials paying careful attention to maintaining confidentiality and protecting records from unauthorized disclosure.

The public health effectiveness of various approaches to counseling, sex-partner referral, and laboratory testing will require careful monitoring. The feasibility and efficacy of each of these measures should be evaluated by state and local health departments to best utilize available resources.

Developed by Center for Prevention Svcs and Center for Infectious Diseases, CDC, in consultation with persons from numerous other organizations and groups.

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Acquired Immunodeficiency Syndrome in Correctional Facilities: A Report of the National Institute of Justice and the American Correctional Association

Recently, the National Institute of Justice (NIJ) of the U.S. Department of Justice, and the American Correctional Association (ACA) jointly sponsored the development of a report on the incidence of acquired immunodeficiency syndrome (AIDS) in correctional facilities, the issues and options facing correctional administrators in formulating policy responses to the problem, and the rationales advanced for various policy choices (*1*). The report was based, in part, on a questionnaire mailed to all 50 state correctional departments, the Federal Bureau of Prisons, and 37 large city and county jail systems. Following are key findings of the report.

1. Responses were received from mid-November 1985 through early January 1986 from all 50 of the state correctional departments, the Federal Bureau of Prisons, and 33 of the 37 large city and county jail systems that had been asked to participate. A cumulative total of 766 AIDS cases meeting the CDC surveillance definition were recognized among inmates in these responding correctional systems; 24 state prison systems and the Federal Bureau of Prisons reported 455 cases, and 20 large city and county jail sys-

tems reported 311 cases.* Of the 766 AIDS patients, 322 (42%) died while in the custody of the correctional systems; 265 (35%) were released from custody; and 179 (23%) remained in custody. The remaining 26 (52%) state systems and 13 (39%) local systems responding to the questionnaire had no reported cases. Among state and federal systems, 80% of the systems accounted for only 5% of the total AIDS cases, while 4% of the systems contributed 72% of the cases. Among responding city and county systems, 69% accounted for only 5% of the total AIDS cases, while 6% accounted for 77% of the cases (Table 4).

2. Respondents reported eight AIDS cases among current or former correctional staff. Seven of the eight had known risk factors for AIDS; investigation of the eighth case is not complete. None of these staff members reported involvement in an incident with an inmate in which transmission of human T-lymphotropic virus type III/lymphadenopathy associated virus (HTLV-III/LAV), the AIDS virus, might have occurred.
3. The geographic distribution of total AIDS cases among inmates is highly skewed. Over 70% of total AIDS cases in state prison systems and city and county jail systems has occurred in the mid-Atlantic region, with all of the other regions of the United States contributing much smaller percentages (Table 5).

TABLE 4. Distribution of acquired immunodeficiency syndrome (AIDS) cases among inmates, by type of correctional system — United States

AIDS cases (range)	State/federal systems				City/county systems			
	Systems	(%)	Cases	(%)	Systems	(%)	Cases	(%)
0	26	(51)	0	(0)	13	(39)	0	(0)
1-3	15	(29)	24	(5)	10	(30)	16	(5)
4-10	5	(10)	30	(7)	7	(21)	43	(14)
11-25	2	(4)	42	(9)	1	(3)	12	(4)
26-50	1	(2)	33	(7)	1	(3)	40	(13)
51-100	1	(2)	95	(21)	0	(0)	0	(0)
> 100	1	(2)	231	(51)	1	(3)	200	(64)
Total	**51**	**(100)**	**455**	**(100)**	**33**	**(100)**	**311**	**(100)**

TABLE 5. Regional distribution of acquired immunodeficiency syndrome (AIDS) cases in correctional facilities, by type of system* — United States

Region	State systems		City/county systems	
	Cases	(%)	Cases	(%)
New England†	16	(3.7)	0	(0.0)
Mid-Atlantic§	327	(75.5)	222	(71.4)
East North Central¶	6	(1.4)	8	(2.6)
West North Central**	0	(0.0)	1	(0.3)
South Atlantic††	49	(11.3)	24	(7.7)
East South Central§§	1	(0.2)	0	(0.0)
West South Central¶¶	12	(2.8)	3	(1.0)
Mountain***	2	(0.5)	1	(0.3)
Pacific†††	20	(4.6)	52	(16.7)
Total	**433**	**(100.0)**	**311**	**(100.0)**

*Federal Bureau of Prisons excluded.

†Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

§New York, New Jersey, Pennsylvania.

¶Ohio, Indiana, Illinois, Michigan, Wisconsin.

**Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.

††Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.

§§Kentucky, Tennessee, Alabama, Mississippi.

¶¶Arkansas, Louisiana, Oklahoma, Texas.

***Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada.

†††Washington, Oregon, California, Alaska, Hawaii.

*Because inmates may move from local to state facilities, it is possible that a small number of inmate cases have been reported more than once.

4. In jurisdictions with large numbers of AIDS cases among inmates, the majority appears to have occurred among persons with histories of intravenous (IV) drug abuse. For example, 95% of cases in the New York state correctional system had such a history (2).
5. Responding correctional systems agreed on the importance of providing education on AIDS to staff and inmates. Ninety-three percent currently provide or are developing AIDS training or educational materials for staff; 83% currently provide or are developing such programs or materials for inmates. Responding jurisdictions in which educational programs had been in effect long enough to offer assessments of their impact reported that such programs have been effective in reducing the fears of staff (85% of jurisdictions) and inmates (79%). Timely and effective education efforts have prevented threatened job actions by correctional staff unions and generally forestalled hysteria over AIDS within the institutions of several correctional systems.
6. Six state prison systems and seven of the responding city or county jail systems are now screening or are planning to screen all inmates, all new inmates, or all inmates belonging to at least one high-risk group for antibody to HTLV-III/LAV (Table 6). Most of the other responding jurisdictions use the test on a more limited basis. This includes testing in support of diagnoses of AIDS or AIDS-related complex (ARC); testing in response to incidents in which HTLV-III/LAV might have been transmitted; testing on inmate request; and testing for epidemiologic studies of the prevalence of seropositivity and/or seroconversion within correctional facilities (Table 6).
7. The majority of responding jurisdictions (67% of state/federal systems and 70% of the city/county systems) either has in place or has in the developmental stage policies and procedures for the correctional management of inmates with AIDS, ARC, and asymptomatic HTLV-III/LAV infection. While housing policies for these inmate categories vary considerably across jurisdictions (Table 7), the four systems with almost 75% of the AIDS cases (New York state, New York City, New Jersey, and Florida) follow the same combination of policies: (1) medical segregation of all inmates with confirmed AIDS, but no segregation of inmates with ARC or asymptomatic HTLV-III/LAV infection; (2) clinical evaluation and ongoing monitoring (without testing for HTLV-III/LAV antibody) of inmates in risk groups; and (3) intensive and continuous education programs on AIDS for both staff and inmates. None of these four systems screen inmates for antibody to HTLV-III/LAV.

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Editorial Note: The NIJ/ACA report illustrates both the scope of the AIDS problem in correctional facilities and the diversity of the responses such facilities are taking.

The apparent lack of reported AIDS cases among correctional staff as a result of contact with inmates is consistent with previous findings that the risk of HTLV-III/LAV transmission in

TABLE 6. Policies of correctional systems for testing inmates for human T-lymphotropic virus type III/lymphadenopathy-associated virus antibody* — United States

Policy	State/federal systems Systems	(%)	City/county systems Systems	(%)
Screening†				
All or all new inmates	4	(8)	0	(0)
Members of at least one risk group	2	(4)	7	(21)
Testing *only* for diagnoses, incident response, or epidemiological studies	39	(76)	20	(61)
Testing only on inmate request	1	(2)	1	(3)
No testing	5	(10)	5	(15)
Total	**51**	**(100)**	**33**	**(100)**

*Includes actual and planned policies.

†The two screening policies are hierarchical; systems with both policies are placed in the policy category listed first.

occupational settings is extremely low and does not appear to result from casual contact. Correctional staff should follow published guidelines for preventing transmission of HTLV-III/LAV infection in the workplace (*3*).

Since IV drug abuse is an important predisposing factor to both incarceration and HTLV-III/LAV infection, it is not surprising to find AIDS cases in inmate populations. It is also not surprising that a high proportion of cases among inmates has been reported from correctional facilities in New York and New Jersey, since those two states have reported 62% of all U.S. AIDS cases associated with histories of IV drug abuse. In addition, the proportion of IV drug abusers with HTLV-III/LAV antibody is reported to be higher in New York City and northern New Jersey than in other parts of the country (*4*).

Incarceration is not, in itself, associated with a risk of HTLV-III/LAV transmission. The risk of transmission in inmate populations depends on the prevalence of infection among persons who have been incarcerated and the frequency with which such persons might participate in IV drug abuse, with sharing of needles, or in sexual contact with other inmates. However, data to quantify this risk have been quite limited.

Thus far, the only study of HTLV-III/LAV transmission among inmates was conducted by the Maryland Division of Corrections (*5*). In that study, conducted from April through July 1985, serologic testing for HTLV-III/LAV antibody was offered at one facility to all 360 inmates who had been incarcerated 7 years or longer. Of the 137 inmates who participated, two (1%), both of whom had been incarcerated for 9 years, were seropositive by both enzyme immunoassay and Western blot methods. Because testing was done in a way to preserve anonymity, additional information about the seropositive inmates was not available. The possible effects of selection bias in this study are also unknown.

Additional data are available from correctional facilities on the incidence of infection with hepatitis B virus (HBV), which has routes of transmission generally similar to those of HTLV-III/LAV. In two recent studies of inmates incarcerated for 1 year, annual seroconversion rates to HBV ranged from 0.8% to 1.3% (*6, 7*).

TABLE 7. Housing policies of correctional systems for inmates with acquired immunodeficiency syndrome (AIDS), AIDS-related complex (ARC), or asymptomatic inmates with antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus* — United States

Policy	State/federal systems Systems	(%)	City/county systems Systems	(%)
Segregate AIDS cases; maintain ARC cases and asymptomatic seropositives in general prison population†	3	(6)	3	(9)
Segregate AIDS and ARC cases; maintain asymptomatic seropositives in general prison population	10	(20)	3	(9)
Segregate all infected inmates	8	(16)	13	(39)
No segregation of infected inmates	2	(4)	0	(0)
No policy	8	(16)	1	(3)
Combinations (involving case-by-case determination)	16	(31)	10	(30)
Other policy combinations	4	(8)	3	(9)
Total	**51**	**(100)**	**33**	**(100)**

*Includes actual and planned policies.

†For the purposes of this categorization, segregation means that the basic policy is to hospitalize inmates (either within or outside the correctional system) or to administratively place inmates in separate housing units or cells.

It is clear from the NIJ/ACA report that many correctional systems have given high priority to AIDS education programs and that such programs are the basis for AIDS-prevention activities in these systems. At present, most correctional systems are performing serologic tests for HTLV-III/LAV antibody on a limited basis. More extensive use of the tests, such as testing all inmates, all new inmates, or all inmates known to belong to risk groups, would undoubtedly identify additional seropositive persons, who might then be candidates for additional educational programs or other measures to decrease the risk that they might infect others. Such testing could, however, pose difficulties for a number of correctional facilities. In some jurisdictions, legal and policy provisions may currently prohibit testing. Many correctional systems assert that if testing is done, but the results cannot be kept confidential, seropositive inmates could face a range of problems, including the possibility of physical harm.

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Recommendations for Preventing Transmission of Infection with Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus during Invasive Procedures

BACKGROUND

On November 15, 1985, "Recommendations for Preventing Transmission of Infection with Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus in the Workplace," was published (*1*). That document gave particular emphasis to health-care settings and indicated that formulation of further specific recommendations for preventing human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) transmission applicable to health-care workers (HCWs) who perform invasive procedures was in progress.

Toward that end, a 2-day meeting was held at CDC to discuss draft recommendations applicable to individuals who perform or assist in invasive procedures.* Following the meeting, revised draft recommendations for HCWs who have contact with tissues or mucous membranes while performing or assisting in operative, obstetric, or dental invasive procedures

*The following organizations were represented at the meeting: American Academy of Family Physicians; American Academy of Periodontology; American Association of Dental Schools; American Association of Medical Colleges; American Association of Oral and Maxillofacial Surgeons; American Association of Physicians for Human Rights; American College of Emergency Physicians; American College of Nurse Midwives; American College of Obstetricians and Gynecologists; American College of Surgeons; American Dental Association; American Dental Hygienists Association; American Hospital Association; American Medical Association; American Nurses' Association; American Public Health Association; Association for Practitioners in Infection Control; Association of Operating Room Nurses; Association of State and Territorial Health Officials; Conference of State and Territorial Epidemiologists; U.S. Food and Drug Administration; Infectious Diseases Society of America; National Association of County Health Officials; National Dental Association; National Institutes of Health; National Medical Association; Nurses Association of the American College of Obstetricians and Gynecologists; Society of Hospital Epidemiologists of America; Surgical Infection Society; and United States Conference of Local Health Officers. In addition, a hospital administrator, a hospital medical director, and representatives from CDC participated in the meeting. These recommendations may not reflect the views of all individual consultants or the organizations they represented.

were sent to participants for comment. In addition, 10 physicians with expertise in infectious diseases and the epidemiology of HTLV-III/LAV infection were consulted to determine whether they felt additional measures or precautions beyond those recommended below were indicated. These 10 experts did not feel that additional recommendations or precautions were indicated.

DEFINITIONS

In this document, an operative procedure is defined as surgical entry into tissues, cavities, or organs or repair of major traumatic injuries in an operating or delivery room, emergency department, or outpatient setting, including both physicians' and dentists' offices. An obstetric procedure is defined as a vaginal or cesarean delivery or other invasive obstetric procedure where bleeding may occur. A dental procedure is defined as the manipulation, cutting, or removal of any oral or perioral tissues, including tooth structure, where bleeding occurs or the potential for bleeding exists.

RECOMMENDATIONS

There have been no reports of HTLV-III/LAV transmission from an HCW to a patient or from a patient to an HCW during operative, obstetric, or dental invasive procedures. Nevertheless, special emphasis should be placed on the following precautions to prevent transmission of bloodborne agents between all patients and all HCWs who perform or assist in invasive procedures.

1. All HCWs who perform or assist in operative, obstetric, or dental invasive procedures must be educated regarding the epidemiology, modes of transmission, and prevention of HTLV-III/LAV infection and the need for routine use of appropriate barrier precautions during procedures and when handling instruments contaminated with blood after procedures.
2. All HCWs who perform or assist in invasive procedures must wear gloves when touching mucous membranes or nonintact skin of all patients and use other appropriate barrier precautions when indicated (e.g., masks, eye coverings, and gowns, if aerosolization or splashes are likely to occur). In the dental setting, as in the operative and obstetric setting, gloves must be worn for touching all mucous membranes and changed between all patient contacts. If a glove is torn or a needlestick or other injury occurs, the glove must be changed as promptly as safety permits and the needle or instrument removed from the sterile field.
3. All HCWs who perform or assist in vaginal or cesarean deliveries must use appropriate barrier precautions (e.g., gloves and gowns) when handling the placenta or the infant until blood and amniotic fluid have been removed from the infant's skin. Recommendations for assisting in the prevention of perinatal transmission of HTLV-III/LAV have been published (*2*).
4. All HCWs who perform or assist in invasive procedures must use extraordinary care to prevent injuries to hands caused by needles, scalpels, and other sharp instruments or devices during procedures; when cleaning used instruments; during disposal of used needles; and when handling sharp instruments following procedures. After use, disposable syringes and needles, scalpel blades, and other sharp items must be placed in puncture-resistant containers for disposal. To prevent needlestick injuries, needles should not be recapped; purposefully bent or broken; removed from disposable syringes; or otherwise manipulated by hand. No data are currently available from controlled studies examining the effect, if any, of the use of needle-cutting devices on the incidence of needlestick injuries.
5. If an incident occurs during an invasive procedure that results in exposure of a patient to the blood of an HCW, the patient should be informed of the incident, and previous recommendations for management of such exposures (*1*) should be followed.
6. No HCW who has exudative lesions or weeping dermatitis should perform or assist in invasive procedures or other direct patient-care activities or handle equipment used for patient care.
7. All HCWs with evidence of any illness that may compromise their ability to adequately and safely perform invasive procedures should be evaluated medically to determine whether they are physically and mentally competent to perform invasive procedures.
8. Routine serologic testing for evidence of HTLV-III/LAV infection is not necessary for HCWs who perform or assist in invasive procedures or for patients undergoing invasive procedures, since the risk of transmission in this setting is so low. Results of such rou-

tine testing would not practically supplement the precautions recommended above in further reducing the negligible risk of transmission during operative, obstetric, or dental invasive procedures.

Previous recommendations (*1,3,4*) should be consulted for: (1) preventing transmission of HTLV-III/LAV infection from HCWs to patients and patients to HCWs in health-care settings other than those described in this document; (2) preventing transmission from patient to patient; (3) sterilizing, disinfecting, housekeeping, and disposing of waste; and (4) managing parenteral and mucous-membrane exposures of HCWs and patients. Previously recommended precautions (*1*) are also applicable to HCWs performing or assisting in invasive procedures.

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Safety of Therapeutic Immune Globulin Preparations with Respect to Transmission of Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus Infection

Immune globulins produced by plasma fractionation methods approved for use in the United States have not been implicated in the transmission of infectious agents. Nevertheless, because immune globulins manufactured before 1985 were derived from plasma of human donors who were not screened for antibody to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), CDC and the U.S. Food and Drug Administration (FDA) have received inquiries concerning the safety of immune globulin (IG), hepatitis B immune globulin (HBIG), and intravenous immune globulin (IVIG). Current epidemiologic and laboratory evidence shows that these preparations carry no discernable risk of transmitting HTLV-III/LAV infection and that current indications for their clinical use should not be changed based on such concerns.

BACKGROUND

The IG, HBIG, IVIG, and other special immune globulins used in the United States are produced by several manufacturers using the Cohn-Oncley fractionation process (*1,2*). This process involves a series of precipitation steps performed in the cold with addition of varying concentrations of ethanol. Production lots of IG and IVIG are made from plasma pools from at least 1,000 donors; HBIG and other specific immune globulins (e.g., varicella-zoster IG) may be prepared from plasma pools from fewer donors.

Before 1985, donors were screened only for hepatitis B surface antigen but not by other tests for specific diagnosis of viral infections. Since April 1985, all donor units also have been screened for antibodies to HTLV-III/LAV, and all repeatedly reactive units have been discarded. Tests conducted at FDA and CDC have shown that as many as two-thirds of HBIG lots, as well as some lots of IG and IVIG, produced between 1982 and 1985 may have been positive for HTLV-III/LAV antibody. The question of safety arises out of concern that some immune globulins currently available were prepared from plasma pools that included units from donors who may have had HTLV-III/LAV viremia.

EPIDEMIOLOGIC STUDIES

Several studies have shown that recipients of HBIG and IG, including recipients of lots known to be positive for antibody to HTLV-III/LAV, did not seroconvert to antibody to HTLV-III/LAV-positivity and have not developed signs and symptoms of acquired immunodeficiency syndrome (AIDS) or other illnesses suggesting HTLV-III/LAV infection.

Since August 1983, CDC has enrolled 938 individuals who have had parenteral or mucous-membrane exposures to blood or body fluids of AIDS patients in a prospective sur-

veillance study. To date, 451 entrants have been followed and tested for HTLV-III/LAV antibody. Of these, 183 persons received IG and/or HBIG as prophylaxis against hepatitis B infection; 100 (55%) received only IG; 65 (36%) received only HBIG; and 18 (10%) received both. One of the 183 HBIG recipients is now positive for HTLV-III/LAV antibody, but no preexposure serum was available for this individual, and seropositivity may have predated the needlestick exposure and IG prophylaxis. Further, heterosexual transmission of HTLV-III/LAV infection in this individual cannot be ruled out. No documented seroconversions have occurred in any of the 183 health-care workers who received IG or HBIG.

Studies have been reported of 16 subjects who received HBIG that was strongly positive for HTLV-III/LAV antibody (*3*). Each patient had been given one to five ampules. A total of 31 doses were administered to 16 individuals. Low levels of passively acquired HTLV-III/LAV antibody were detected shortly after injection, but reactivity did not persist. Six months after the last HBIG injection, none of the 16 individuals had antibody to HTLV-III/LAV.

In a study of prophylaxis against cytomegalovirus (CMV) infections among kidney-transplant patients, 16 patients received CMV-specific IVIG preparations subsequently found to contain HTLV-III/LAV antibody. After 10 months or longer of follow-up, none of the 16 recipients developed antibody or other evidence of HTLV-III/LAV infection.

In studies of a group of IVIG recipients, most of whom had idiopathic thrombocytopenia, none of 134 patients developed antibodies or other evidence of HTLV-III/LAV infection.

Information regarding past therapy with immune globulins is available from 10,227 of 17,115 AIDS patients reported to CDC. Three hundred fifty-eight (4%) reported receipt of an IG preparation. All but seven of these patients also were members of groups known to be at high risk for developing AIDS. The percentage of patients with no recognized risk factors for AIDS was not significantly different among those who received immune globulins (7/358 [2%]) than among those who did not (358/9,869 [4%]).

LABORATORY STUDIES

Scientists at FDA recently evaluated the basic fractionation processes (*1,2*) used for production of immune globulins to determine effectiveness of those procedures in eliminating HTLV-III/LAV infectivity (*4*). Six sequential steps in a typical process were evaluated. The study was designed so that efficiency of eliminating HTLV-III/LAV at each step was measured. The degree to which HTLV-III/LAV was reduced by partitioning or inactivation at individual steps ranged from 10^{-1} to more than 10^{-4} of in vitro infectious units (IVIU)/ml. The effectiveness of virus removal in the entire process by partitioning and inactivation was calculated to be greater than 1×10^{15} IVIU/ml.

Concentrations of infectious HTLV-III/LAV in plasma of infected persons have been estimated to be less than 100 IVIU/ml. Further, FDA scientists have shown that the geometric mean infectivity titer of plasma from 43 HTLV-III/LAV infected persons was 0.02 IVIU/ml (*4*). Thus, the margin of safety based on the removal of infectivity by the fractionation process is extremely high.

Scientists at CDC and FDA also cultured 38 lots of HBIG, IVIG, and IG, most of which contained HTLV-III/LAV antibody. HTLV-III/LAV was not recovered from any lot tested.

Reported by J Bossell, MD, Cornell University, New York City; Central Laboratories Swiss Red Cross Blood Transfusion Svc, Berne, Switzerland; Immuno A.G., Vienna, Austria; KabiVitrum AB, Stockholm, Sweden; Massachusetts Public Health Biologics Laboratories, Boston, Massachusetts; Miles Laboratories, Inc., Berkeley, Travenol Laboratories, Inc., Glendale, California; Center for Drugs and Biologics, U.S. Food and Drug Administration; Center for Infectious Diseases, CDC.

Editorial Note: The laboratory and epidemiologic studies referred to have shown that concern about HTLV-III/LAV infection associated with the use of immune globulins available in the United States is not warranted. Strategies for using immune globulins recommended by the Immunization Practices Advisory Committee should be followed (*5*).

Recently, concern has been expressed that patients who received IG prepared from plasma of donors not screened for HTLV-III/LAV antibody may have a passively acquired false-positive reaction for antibody (*6*). Passively acquired HTLV-III/LAV antibody from HBIG known to contain high levels of antibody has been reported (*3*). Based on the estimated half-life of globulins in plasma, it can be calculated that passively acquired antibodies might be detected in sera of recipients for as long as 6 months after administration of immune globulins. It is important to recognize this possibility when attempting to determine the significance of HTLV-III/LAV antibody in a person who has recently received immune globulins, especially HBIG.

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Recommended Infection-Control Practices for Dentistry

Dental personnel may be exposed to a wide variety of microorganisms in the blood and saliva of patients they treat in the dental operatory. These include *Mycobacterium tuberculosis,* hepatitis B virus, staphylococci, streptococci, cytomegalovirus, herpes simplex virus types I and II, human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), and a number of viruses that infect the upper respiratory tract. Infections may be transmitted in dental practice by blood or saliva through direct contact, droplets, or aerosols. Although not documented, indirect contact transmission of infection by contaminated instruments is possible. Patients and dental health-care workers (DHCWs) have the potential of transmitting infections to each other (*1*).

A common set of infection-control strategies should be effective for preventing hepatitis B, acquired immunodeficiency syndrome, and other infectious diseases caused by bloodborne viruses (*2-4*). The ability of hepatitis B virus to survive in the environment (*5*) and the high titers of virus in blood (*6*) make this virus a good model for infection-control practices to prevent transmission of a large number of other infectious agents by blood or saliva. Because all infected patients cannot be identified by history, physical examination, or readily available laboratory tests (*3*), the following recommendations should be used routinely in the care of all patients in dental practices.

MEDICAL HISTORY

Always obtain a thorough medical history. Include specific questions about medications, current illnesses, hepatitis, recurrent illnesses, unintentional weight loss, lymphadenopathy, oral soft tissue lesions, or other infections. Medical consultation may be indicated when a history of active infection or systemic disease is elicited.

USE OF PROTECTIVE ATTIRE AND BARRIER TECHNIQUES

1. For protection of personnel and patients, gloves must always be worn when touching blood, saliva, or mucous membranes (*7-10*). Gloves must be worn by DHCWs when touching blood-soiled items, body fluids, or secretions, as well as surfaces contaminated with them. Gloves must be worn when examining all oral lesions. All work must be completed on one patient, where possible, and the hands must be washed and regloved before performing procedures on another patient. Repeated use of a single pair of gloves is not recommended, since such use is likely to produce defects in the glove material, which will diminish its value as an effective barrier.

2. Surgical masks and protective eyewear or chin-length plastic face shields must be worn when splashing or spattering of blood or other body fluids is likely, as is common in dentistry (*11,12*).

3. Reusable or disposable gowns, laboratory coats, or uniforms must be worn when clothing is likely to be soiled with blood or other body fluids. If reusable gowns are worn, they may be washed, using a normal laundry cycle. Gowns should be changed at least daily or when visibly soiled with blood (*13*).

4. Impervious-backed paper, aluminum foil, or clear plastic wrap may be used to cover surfaces (e.g., light handles or x-ray unit heads) that may be contaminated by blood or saliva and that are difficult or impossible to disinfect. The coverings should be removed (while DHCWs are gloved), discarded, and then replaced (after ungloving) with clean material between patients.

5. All procedures and manipulations of potentially infective materials should be performed carefully to minimize the formation of droplets, spatters, and aerosols, where possible. Use of rubber dams, where appropriate, high-speed evacuation, and proper patient positioning should facilitate this process.

HANDWASHING AND CARE OF HANDS

Hands must always be washed between patient treatment contacts (following removal of gloves), after touching inanimate objects likely to be contaminated by blood or saliva from other patients, and before leaving the operatory. The rationale for handwashing after gloves have been worn is that gloves become perforated, knowingly or unknowingly, during use and allow bacteria to enter beneath the glove material and multiply rapidly. For many routine dental procedures, such as examinations and nonsurgical techniques, handwashing with plain soap appears to be adequate, since soap and water will remove transient microorganisms acquired directly or indirectly from patient contact (*13*). For surgical procedures, an antimicrobial surgical handscrub should be used (*14*). Extraordinary care must be used to avoid hand injuries during procedures. However, when gloves are torn, cut, or punctured, they must be removed immediately, hands thoroughly washed, and regloving accomplished before completion of the dental procedure. DHCWs who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling dental patient-care equipment until the condition resolves (*15*).

USE AND CARE OF SHARP INSTRUMENTS AND NEEDLES

1. Sharp items (needles, scalpel blades, and other sharp instruments) should be considered as potentially infective and must be handled with extraordinary care to prevent unintentional injuries.

2. Disposable syringes and needles, scalpel blades, and other sharp items must be placed into puncture-resistant containers located as close as practical to the area in which they were used. To prevent needlestick injuries, disposable needles should not be recapped; purposefully bent or broken; removed from disposable syringes; or otherwise manipulated by hand after use.

3. Recapping of a needle increases the risk of unintentional needlestick injury. There is no evidence to suggest that reusable aspirating-type syringes used in dentistry should be handled differently from other syringes. Needles of these devices should not be recapped, bent, or broken before disposal.

4. Because certain dental procedures on an individual patient may require multiple injections of anesthetic or other medications from a single syringe, it would be more prudent to place the unsheathed needle into a "sterile field" between injections rather than to recap the needle between injections. A new (sterile) syringe and a fresh solution should be used for each patient.

INDICATIONS FOR HIGH-LEVEL DISINFECTION OR STERILIZATION OF INSTRUMENTS

Surgical and other instruments that normally penetrate soft tissue and/or bone (e.g., forceps, scalpels, bone chisels, scalers, and surgical burs) should be sterilized after each use. Instruments that are not intended to penetrate oral soft tissues or bone (e.g., amalgam condensers, plastic instruments, and burs) but that may come into contact with oral tissues should also be sterilized after each use, if possible; however, if sterilization is not feasible, the latter instruments should receive high-level disinfection (*3, 13, 16*).

METHODS FOR HIGH-LEVEL DISINFECTION OR STERILIZATION

Before high-level disinfection or sterilization, instruments should be cleaned to remove debris. Cleaning may be accomplished by a thorough scrubbing with soap and water or a detergent, or by using a mechanical device (e.g., an ultrasonic cleaner). Persons involved in cleaning and decontaminating instruments should wear heavy-duty rubber gloves to prevent hand injuries. Metal and heat-stable dental instruments should be routinely sterilized between use by steam under pressure (autoclaving), dry heat, or chemical vapor. The adequacy of sterilization cycles should be verified by the periodic use of spore-testing devices (e.g., weekly for most dental practices) (*13*). Heat- and steam-sensitive chemical indicators may be used on the outside of each pack to assure it has been exposed to a sterilizing cycle. Heat-sensitive instruments

may require up to 10 hours' exposure in a liquid chemical agent registered by the U.S. Environmental Protection Agency (EPA) as a disinfectant/sterilant; this should be followed by rinsing with sterile water. High-level disinfection may be accomplished by immersion in either boiling water for at least 10 minutes or an EPA-registered disinfectant/sterilant chemical for the exposure time recommended by the chemical's manufacturer.

DECONTAMINATION OF ENVIRONMENTAL SURFACES

At the completion of work activities, countertops and surfaces that may have become contaminated with blood or saliva should be wiped with absorbent toweling to remove extraneous organic material, then disinfected with a suitable chemical germicide. A solution of sodium hypochlorite (household bleach) prepared fresh daily is an inexpensive and very effective germicide. Concentrations ranging from 5,000 ppm (a 1:10 dilution of household bleach) to 500 ppm (a 1:100 dilution) sodium hypochlorite are effective, depending on the amount of organic material (e.g., blood, mucus, etc.) present on the surface to be cleaned and disinfected. Caution should be exercised, since sodium hypochlorite is corrosive to metals, especially aluminum.

DECONTAMINATION OF LABORATORY SUPPLIES AND MATERIALS

Blood and saliva should be thoroughly and carefully cleaned from laboratory supplies and materials that have been used in the mouth (e.g., impression materials, bite registration), especially before polishing and grinding intra-oral devices. Materials, impressions, and intra-oral appliances should be cleaned and disinfected before being handled, adjusted, or sent to a dental laboratory (*17*). These items should also be cleaned and disinfected when returned from the dental laboratory and before placement in the patient's mouth. *Because of the ever-increasing variety of dental materials used intra-orally, DHCWs are advised to consult with manufacturers as to the stability of specific materials relative to disinfection procedures.* A chemical germicide that is registered with the EPA as a "hospital disinfectant" and that has a label claim for mycobactericidal (e.g., tuberculocidal) activity is preferred, because mycobacteria represent one of the most resistant groups of microorganisms; therefore, germicides that are effective against mycobacteria are also effective against other bacterial and viral pathogens (*15*). Communication between a dental office and a dental laboratory with regard to handling and decontamination of supplies and materials is of the utmost importance.

USE AND CARE OF ULTRASONIC SCALERS, HANDPIECES, AND DENTAL UNITS

1. Routine sterilization of handpieces between patients is desirable; however, not all handpieces can be sterilized. The present physical configurations of most handpieces do not readily lend them to high-level disinfection of both external and internal surfaces (see 2 below); therefore, when using handpieces that cannot be sterilized, the following cleaning and disinfection procedures should be completed between each patient: After use, the handpiece should be flushed (see 2 below), then thoroughly scrubbed with a detergent and water to remove adherent material. It should then be thoroughly wiped with absorbent material saturated with a chemical germicide that is registered with the EPA as a "hospital disinfectant" and is mycobactericidal at use-dilution (*15*). The disinfecting solution should remain in contact with the handpiece for a time specified by the disinfectant's manufacturer. Ultrasonic scalers and air/water syringes should be treated in a similar manner between patients. Following disinfection, any chemical residue should be removed by rinsing with sterile water.

2. Because water retraction valves within the dental units may aspirate infective materials back into the handpiece and water line, check valves should be installed to reduce the risk of transfer of infective material (*18*). While the magnitude of this risk is not known, it is prudent for water-cooled handpieces to be run and to discharge water into a sink or container for 20-30 seconds after completing care on each patient. This is intended to physically flush out patient material that may have been aspirated into the handpiece or water line. Additionally, there is some evidence that overnight bacterial accumulation can be significantly reduced by allowing water-cooled handpieces to run and to discharge water into a sink or container for several minutes at the beginning of the clinic day (*19*). Sterile saline or sterile water should be used as a coolant/irrigator when performing surgical procedures involving the cutting of soft tissue or bone.

HANDLING OF BIOPSY SPECIMENS

In general, each specimen should be put in a sturdy container with a secure lid to prevent leaking during transport. Care should be taken when collecting specimens to avoid contamination of the outside of the container. If the outside of the container is visibly contaminated, it should be cleaned and disinfected, or placed in an impervious bag (*20*).

DISPOSAL OF WASTE MATERIALS

All sharp items (especially needles), tissues, or blood should be considered potentially infective and should be handled and disposed of with special precautions. Disposable needles, scalpels, or other sharp items should be placed intact into puncture-resistant containers before disposal. Blood, suctioned fluids, or other liquid waste may be carefully poured into a drain connected to a sanitary sewer system. Other solid waste contaminated with blood or other body fluids should be placed in sealed, sturdy impervious bags to prevent leakage of the contained items. Such contained solid wastes can then be disposed of according to requirements established by local or state environmental regulatory agencies and published recommendations (*13,20*).

Developed by Dental Disease Prevention Activity, Center for Prevention Svcs, Hospital Infections Program, Center for Infectious Diseases, CDC.

Editorial Note: All DHCWs must be made aware of sources and methods of transmission of infectious diseases. The above recommendations for infection control in dental practices incorporate procedures that should be effective in preventing the transmission of infectious agents from dental patients to DHCWs and vice versa. Assessment of quantifiable risks to dental personnel and patients for specific diseases requires further research. There is no current documentation of patient-to-patient blood- or saliva-borne disease transmission from procedures performed in dental practice. While few in number, reported outbreaks of dentist-to-patient transmission of hepatitis B have resulted in serious and even fatal consequences (*9*). Herpes simplex virus has been transmitted to over 20 patients from the fingers of a DHCW (*10*). Serologic markers for hepatitis B in dentists have increased dramatically in the United States over the past several years, which suggests current infection-control practices have been insufficient to prevent the transmission of this infectious agent in the dental operatory. While vaccination for hepatitis B is strongly recommended for dental personnel (*21*), vaccination alone is not cause for relaxation of strict adherence to accepted methods of asepsis, disinfection, and sterilization.

Various infection-control guidelines exist for hospitals and other clinical settings. Dental facilities located in hospitals and other institutional settings have generally utilized existing guidelines for institutional practice. These recommendations are offered as guidance to DHCWs in noninstitutional settings for enhancing infection-control practices in dentistry; they may be useful in institutional settings also.

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Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus Antibody Testing at Alternate Sites

On March 2, 1985, an enzyme-linked immunosorbant assay (ELISA) test to detect antibodies to human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV) was licensed by the U.S. Food and Drug Administration to screen blood and plasma collected for transfusion or manufactured into other products. Since it was recognized that many individuals in groups at high risk for AIDS might want testing to determine their antibody status, federal funds for alternate testing sites were made available so that HTLV-III/LAV antibody tests could be obtained free of charge outside the blood-bank setting. A primary goal was to protect the nation's blood supply by limiting the potential for donation of false-negative units. The alternate sites were also needed to ensure that individuals wishing to be tested would receive appropriate pretest counseling, post-test counseling, and referral for medical evaluation, if indicated.

Cooperative agreements between CDC and 55 state and local health departments began April 26, 1985. The cooperative agreements were for a 90-day period, since they were intended to defray start-up costs only. Most agreements were subsequently extended for an additional 90 days without additional funding at the request of the individual health departments. Preliminary data on the activities supported by the cooperative agreements were reported to CDC in September 1985 and January 1986. As of September 6, 1985, at least one alternate testing site had been established by 52 of the 55 project areas; an estimated 518 sites had been established nationwide; and 21,200 persons had been tested.

Activities increased substantially during the last quarter of 1985. By December 31, 1985, 874 testing sites had been established in 53 project areas (Table 5). This total included 275 sites in New York City located in private physicians' offices. Nationwide, 79,100 persons had been tested. Pretest counseling had been provided to 93,900 persons, and post-test counseling, to 55,500. A total of 17.3% of the individuals tested at these sites had repeatedly reactive ELISA tests. No relationship was noted between the number of acquired immunodeficiency syndrome (AIDS) cases reported in a particular project area and the number of tests performed at alternate sites (Table 6).

Reported by Div of Sexually Transmitted Diseases, Center for Prevention Svcs, CDC.

Editorial Note: Many of the project areas reported they had underestimated the difficulty of establishing alternate sites on a short-term basis. Start-up delays were common because of administrative procedures and such factors as general hiring freezes and the development of systems to assure strict confidentiality of all records related to counseling and clinical laboratory test results. Moreover, the initial demand for services was less than most areas had anticipated. The number of tests performed in each area depended on many factors, including accessibility of services, perception of the benefits or risks of testing, and awareness of the existence of services by those at risk. The utilization of the sites varied widely in both high and low AIDS-incidence areas (Table 6), perhaps indicating that demand for testing depends on the degree to which it is encouraged and made accessible for persons at risk. In one project area with a high test-to-case ratio, testing was actively promoted by both public health authorities and AIDS risk-group representatives (*1*).

TABLE 5. Alternate testing site activities — United States, 1985

Area	Testing sites	Pretest sessions	Persons tested	Post-test sessions	Percent positive*
UNITED STATES	**874**	**93,917**	**79,083**	**55,499**	**17.3**
New England					
Maine	4	42	42	42	9.5
N.H.	1	73	429	53	9.8
Vt.	19	0	110	110	2.7
Mass.	7	1,400	600	450	11.8
R.I.	1	308	695	214	10.6
Conn.	0	0	0	0	—
Mid-Atlantic					
Upstate N.Y.	8	2,376	1,697	1,254	9.0
N.Y. City	275	7,042	2,032	2,032	30.7
N.J.	4	1,844	1,818	246	13.5
Pa.	7	2,204	1,608	1,333	10.1
E.N. Central					
Ohio	7	3,174	2,780	2,500	17.2
Ind.	9	3,338	827	756	18.1
Ill.	3	280	221	0	13.1
Mich.	5	2,633	1,897	303	15.1
Wis.	30	1,050	1,021	1,010	12.2
W.N. Central					
Minn.	4	1,730	1,717	1,614	13.8
Iowa	11	947	947	67	7.1
Mo.	12	1,241	1,026	851	18.6
N. Dak.	2	120	120	120	5.0
S. Dak.	2	4	4	4	50.0
Nebr.	11	235	199	141	24.6
Kans.	18	651	306	289	9.8
S. Atlantic					
Del.	7	785	198	190	8.1
Md.	26	1,586	1,467	952	12.7
D.C.	2	1,269	1,235	1,235	19.0
Va.	5	687	611	587	15.1
W. Va.	7	269	240	178	11.7
N.C.	93	923	711	461	18.3
S.C.	46	1,131	1,064	990	12.0
Ga.	10	525	554	161	12.3
Fla.	23	6,074	5,811	3,756	21.4
E.S. Central					
Ky.	5	417	152	132	17.1
Tenn.	5	946	684	513	13.0
Ala.	5	564	518	70	16.4
Miss.	14	150	143	0	18.2
W.S. Central					
Ark.	1	120	106	93	17.9
La.	7	1,644	921	695	23.3
Okla.	7	711	691	595	21.4
Tex.	27	8,773	7,564	5,379	12.5
Mountain					
Mont.	7	170	177	168	6.8
Idaho	1	137	380	109	8.4
Wyo.	1	0	39	1	0.0
Colo.	10	4,252	4,252	4,252	41.5
N. Mex.	6	434	243	170	17.3
Ariz.	1	662	427	427	20.1
Utah	21	216	416	148	39.4
Nev.	3	984	458	63	13.8

*On at least two ELISA tests.

TABLE 5. Alternate testing site activities — United States, 1985 (Continued)

Area	Testing sites	Pretest sessions	Persons tested	Post-test sessions	Percent positive*
Pacific					
Wash.	18	3,136	2,569	2,330	12.7
Oreg.	15	829	1,435	829	21.2
Calif.	51	17,721	17,546	11,552	13.7
San Fran.	2	5,898	5,898	5,047	19.9
Alaska	5	824	915	77	9.3
Hawaii	1	793	658	599	17.3
Guam	0	0	0	0	—
P.R.	2	595	904	351	40.7
V.I.	0	0	0	0	—
Pac. Trust Terr.	0	0	0	0	—

*On at least two ELISA tests.

TABLE 6. Reported AIDS cases and tests for HTLV-III/LAV antibody performed at alternate sites, for 10 project areas — United States, 1985*

Project area	Reported AIDS cases†	HTLV-III/LAV tests	Tests per case
New York City	2,140	2,032	1.0
California§	1,923	23,444	12.2
Florida	516	5,811	11.3
Texas	483	7,564	15.7
New Jersey	460	1,818	4.0
Colorado	61	4,252	69.7
Ohio	53	2,780	52.5
Oregon	33	1,435	43.5
Iowa	13	947	72.9
Alaska	5	915	183.0
United States	**8,072**	**79,083**	**9.8**

*This table shows five project areas with the highest number of reported cases and five project areas with the highest rates of tests per case.

†Provisional totals reported to *MMWR* through week 52, 1985.

§Includes the separately funded San Francisco project area.

The goal of protecting the blood supply by providing alternate sites at which persons could be tested was achieved. In addition, experience with the HTLV-III/LAV ELISA tests since licensure in March 1985 has shown them to be remarkably sensitive and specific (*2*) and to be useful, not only for preventive purposes, but also for the diagnosis and differential diagnosis of clinical illness. An evaluation of the tests used to screen blood donors in a large metropolitan area showed a specificity of 99.8% (*3*). Thus, they have value in identifying individuals who are infected, and who are likely to be able to transmit the infection to others by the established routes of transmission, even if such individuals themselves are asymptomatic.

Accordingly, the U.S. Public Health Service has proposed additional applications to prevent perinatal transmission (*4*) and to help reduce drug abuse-related and sexual transmission of HTLV-III/LAV virus by infected persons (*5*). The main purpose of the additional applications is to facilitate identification of seropositive asymptomatic persons, both for medical evaluation and for counseling to prevent transmission. Reduction of sexual and drug-related transmission of HTLV-III/LAV should be enhanced by using available serologic tests to give asymptomatic, infected individuals in high-risk groups the opportunity to know their status so they can take appropriate steps to prevent further transmission (*6*).

The wide network of alternate testing sites that has been established by state and local health departments, frequently in cooperation with local community groups, may facilitate extension of testing services to selected populations at increased risk for HTLV-III/LAV infection.

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1986 May 23; 35:334–339

Classification System for Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus Infections

INTRODUCTION

Persons infected with the etiologic retrovirus of acquired immunodeficiency syndrome (AIDS) (*1-4*)* may present with a variety of manifestations ranging from asymptomatic infection to severe immunodeficiency and life-threatening secondary infectious diseases or cancers. The rapid growth of knowledge about human T-lymphotropic virus type III/ lymphadenopathy-associated virus (HTLV-III/LAV) has resulted in an increasing need for a system of classifying patients within this spectrum of clinical and laboratory findings attributable to HTLV-III/LAV infection (*5-7*).

Various means are now used to describe and assess patients with manifestations of HTLV-III/LAV infection and to describe their signs, symptoms, and laboratory findings. The surveillance definition of AIDS has proven to be extremely valuable and quite reliable for some epidemiologic studies and clinical assessment of patients with the more severe manifestations of disease. However, more inclusive definitions and classifications of HTLV-III/LAV infection are needed for optimum patient care, health planning, and public health control strategies, as well as for epidemiologic studies and special surveys. A broadly applicable, easily understood classification system should also facilitate and clarify communication about this disease.

In an attempt to formulate the most appropriate classification system, CDC has sought the advice of a panel of expert consultants† to assist in defining the manifestations of HTLV-III/ LAV infection.

GOALS AND OBJECTIVES OF THE CLASSIFICATION SYSTEM

The classification system presented in this report is primarily applicable to public health purposes, including disease reporting and surveillance, epidemiologic studies, prevention and control activities, and public health policy and planning.

Immediate applications of such a system include the classification of infected persons for reporting of cases to state and local public health agencies, and use in various disease coding and recording systems, such as the forthcoming 10th revision of the International Classification of Diseases.

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*The AIDS virus has been variously termed human T-lymphotropic virus type III (HTLV-III), lymphadenopathy-associated virus (LAV), AIDS-associated retrovirus (ARV), or human immunodeficiency virus (HIV). The designation human immunodeficiency virus (HIV) has recently been proposed by a subcommittee of the International Committee for the Taxonomy of Viruses as the appropriate name for the retrovirus that has been implicated as the causative agent of AIDS (*4*).

†The following persons served on the review panel: DS Burke, MD, RR Redfield, MD, Walter Reed Army Institute of Research, Washington, DC; J Chin, MD, State Epidemiologist, California Department of Health Services; LZ Cooper, MD, St Luke's-Roosevelt Hospital Center, New York City; JP Davis, MD, State Epidemiologist, Wisconsin Division of Health; MA Fischl, MD, University of Miami School of Medicine, Miami, Florida; G Friedland, MD, Albert Einstein College of Medicine, New York City; MA Johnson, MD, DI Abrams, MD, San Francisco General Hospital; D Mildvan, MD, Beth Israel Medical Center, New York City; CU Tuazon, MD, George Washington University School of Medicine, Washington, DC; RW Price, MD, Memorial Sloan-Kettering Cancer Center, New York City; C Konigsberg, MD, Broward County Public Health Unit, Fort Lauderdale, Florida; MS Gottlieb, MD, University of California–Los Angeles Medical Center; representatives of the National Institute of Allergy and Infectious Diseases and the National Cancer Institute, National Institutes of Health; Center for Infectious Diseases, CDC.

DEFINITION OF HTLV-III/LAV INFECTION

The most specific diagnosis of HTLV-III/LAV infection is by direct identification of the virus in host tissues by virus isolation; however, the techniques for isolating HTLV-III/LAV currently lack sensitivity for detecting infection and are not readily available. For public health purposes, patients with repeatedly reactive screening tests for HTLV-III/LAV antibody (e.g., enzyme-linked immunosorbent assay) in whom antibody is also identified by the use of supplemental tests (e.g., Western blot, immunofluorescence assay) should be considered both infected and infective (*8-10*).

Although HTLV-III/LAV infection is identified by isolation of the virus or, indirectly, by the presence of antibody to the virus, a presumptive clinical diagnosis of HTLV-III/LAV infection has been made in some situations in the absence of positive virologic or serologic test results. There is a very strong correlation between the clinical manifestations of AIDS as defined by CDC and the presence of HTLV-III/LAV antibody (*11-14*). Most persons whose clinical illness fulfills the CDC surveillance definition for AIDS will have been infected with the virus (*12-14*).

CLASSIFICATION SYSTEM

This system classifies the manifestations of HTLV-III/LAV infection into four mutually exclusive groups, designated by Roman numerals I through IV (Table 5). *The classification system applies only to patients diagnosed as having HTLV-III/LAV infection (see previous section,* **DEFINITION OF HTLV-III/LAV INFECTION**). Classification in a particular group is not explicitly intended to have prognostic significance, nor to designate severity of illness. However, classification in the four principal groups, I-IV, is hierarchical in that persons classified in a particular group should not be reclassified in a preceding group if clinical findings resolve, since clinical improvement may not accurately reflect changes in the severity of the underlying disease.

Group I includes patients with transient signs and symptoms that appear at the time of, or shortly after, initial infection with HTLV-III/LAV as identified by laboratory studies. All patients in Group I will be reclassified in another group following resolution of this acute syndrome.

TABLE 5. Summary of classification system for human T-lymphotropic virus type III/lymphadenopathy-associated virus

Group I.	Acute infection
Group II.	Asymptomatic infection*
Group III.	Persistent generalized lymphadenopathy*
Group IV.	Other disease
Subgroup A.	Constitutional disease
Subgroup B.	Neurologic disease
Subgroup C.	Secondary infectious diseases
Category C-1.	Specified secondary infectious diseases listed in the CDC surveillance definition for AIDS†
Category C-2.	Other specified secondary infectious diseases
Subgroup D.	Secondary cancers†
Subgroup E.	Other conditions

*Patients in Groups II and III may be subclassified on the basis of a laboratory evaluation.

†Includes those patients whose clinical presentation fulfills the definition of AIDS used by CDC for national reporting.

Group II includes patients who have no signs or symptoms of HTLV-III/LAV infection. Patients in this category may be subclassified based on whether hematologic and/or immunologic laboratory studies have been done and whether results are abnormal in a manner consistent with the effects of HTLV-III/LAV infection.

Group III includes patients with persistent generalized lymphadenopathy, but without findings that would lead to classification in Group IV. Patients in this category may be subclassified based on the results of laboratory studies in the same manner as patients in Group II.

Group IV includes patients with clinical symptoms and signs of HTLV-III/LAV infection other than or in addition to lymphadenopathy. Patients in this group are assigned *to one or more* subgroups based on clinical findings. These subgroups are A, constitutional disease; B, neurologic disease; C, secondary infectious diseases; D, secondary cancers; and E, other conditions resulting from HTLV-III/LAV infection. Patients [illegible] among subgroups [illegible]

Definitions of the groups and subgroups are as follows:

Group I. Acute HTLV-III/LAV Infection. Defined as a mononucleosis-like syndrome, with or without aseptic meningitis, associated with seroconversion for HTLV-III/LAV antibody (*15-16*). Antibody seroconversion is required as evidence of initial infection; current viral isolation procedures are not adequately sensitive to be relied on for demonstrating the onset of infection.

Group II. Asymptomatic HTLV-III/LAV Infection. Defined as the absence of signs or symptoms of HTLV-III/LAV infection. To be classified in Group II, patients must have had no previous signs or symptoms that would have led to classification in Groups III or IV. Patients whose clinical findings caused them to be classified in Groups III or IV should not be reclassified in Group II if those clinical findings resolve.

Patients in this group may be subclassified on the basis of a laboratory evaluation. Laboratory studies commonly indicated for patients with HTLV-III/LAV infection include, but are not limited to, a complete blood count (including differential white blood cell count) and a platelet count. Immunologic tests, especially T-lymphocyte helper and suppressor cell counts, are also an important part of the overall evaluation. Patients whose test results are within normal limits, as well as those for whom a laboratory evaluation has not yet been completed, should be differentiated from patients whose test results are consistent with defects associated with HTLV-III/LAV infection (e.g., lymphopenia, thrombocytopenia, decreased number of helper [T_4] T-lymphocytes).

Group III. Persistent Generalized Lymphadenopathy (PGL). Defined as palpable lymphadenopathy (lymph node enlargement of 1 cm or greater) at two or more extra-inguinal sites persisting for more than 3 months in the absence of a concurrent illness or condition other than HTLV-III/LAV infection to explain the findings. Patients in this group may also be subclassified on the basis of a laboratory evaluation, as is done for asymptomatic patients in Group II (see above). Patients with PGL whose clinical findings caused them to be classified in Group IV should not be reclassified in Group III if those other clinical findings resolve.

Group IV. Other HTLV-III/LAV Disease. The clinical manifestations of patients in this group may be designated by assignment to one or more subgroups (A-E) listed below. Within Group IV, subgroup classification is independent of the presence or absence of lymphadenopathy. Each subgroup may include patients who are minimally symptomatic, as well as patients who are severely ill. Increased specificity for manifestations of HTLV-III/LAV infection, if needed for clinical purposes or research purposes or for disability determinations, may be achieved by creating additional divisions within each subgroup.

Subgroup A. Constitutional disease. Defined as one or more of the following: fever persisting more than 1 month, involuntary weight loss of greater than 10% of baseline, or diarrhea persisting more than 1 month; and the absence of a concurrent illness or condition other than HTLV-III/LAV infection to explain the findings.

Subgroup B. Neurologic disease. Defined as one or more of the following: dementia, myelopathy, or peripheral neuropathy; and the absence of a concurrent illness or condition other than HTLV-III/LAV infection to explain the findings.

Subgroup C. Secondary infectious diseases. Defined as the diagnosis of an infectious disease associated with HTLV-III/LAV infection and/or at least moderately indicative of a defect in cell-mediated immunity. Patients in this subgroup are divided further into two categories:

Category C-1. Includes patients with symptomatic or invasive disease due to one of 12 specified secondary infectious diseases listed in the surveillance definition of AIDS[§]: *Pneumocystis carinii* pneumonia, chronic cryptosporidiosis, toxoplasmosis, extraintestinal strongyloidiasis, isosporiasis, candidiasis (esophageal, bronchial, or pulmonary), cryptococcosis, histoplasmosis, mycobacterial infection with *Mycobacterium avium* complex or *M. kansasii*, cytomegalovirus infection, chronic mucocutaneous or disseminated herpes simplex virus infection, and progressive multifocal leukoencephalopathy.

Category C-2. Includes patients with symptomatic or invasive disease due to one of six other specified secondary infectious diseases: oral hairy leukoplakia, multidermatomal herpes zoster, recurrent *Salmonella* bacteremia, nocardiosis, tuberculosis, or oral candidiasis (thrush).

[§]This subgroup includes patients with one or more of the specified infectious diseases listed in the clinical presentation for the definition of AIDS as used by the national reporting

Subgroup D. Secondary cancers. Defined as the diagnosis of one or more kinds of cancer known to be associated with HTLV-III/LAV infection as listed in the surveillance definition of AIDS and at least moderately indicative of a defect in cell-mediated immunity¶: Kaposi's sarcoma, non-Hodgkin's lymphoma (small, noncleaved lymphoma or immunoblastic sarcoma), or primary lymphoma of the brain.

Subgroup E. Other conditions in HTLV-III/LAV infection. Defined as the presence of other clinical findings or diseases, not classifiable above, that may be attributed to HTLV-III/LAV infection and/or may be indicative of a defect in cell-mediated immunity. Included are patients with chronic lymphoid interstitial pneumonitis. Also included are those patients whose signs or symptoms could be attributed either to HTLV-III/LAV infection or to another coexisting disease not classified elsewhere, and patients with other clinical illnesses, the course or management of which may be complicated or altered by HTLV-III/LAV infection. Examples include: patients with constitutional symptoms not meeting the criteria for subgroup IV-A; patients with infectious diseases not listed in subgroup IV-C; and patients with neoplasms not listed in subgroup IV-D.

Reported by Center for Infectious Diseases, CDC.

Editorial Note: The classification system is meant to provide a means of grouping patients infected with HTLV-III/LAV according to the clinical expression of disease. It will require periodic revision as warranted by new information about HTLV-III/LAV infection. The definition of particular syndromes will evolve with increasing knowledge of the significance of certain clinical findings and laboratory tests. New diagnostic techniques, such as the detection of specific HTLV-III/LAV antigens or antibodies, may add specificity to the assessment of patients infected with HTLV-III/LAV.

The classification system defines a limited number of specified clinical presentations. Patients whose signs and symptoms do not meet the criteria for other groups and subgroups, but whose findings are attributable to HTLV-III/LAV infection, should be classified in subgroup IV-E. As the classification system is revised and updated, certain subsets of patients in subgroup IV-E may be identified as having related groups of clinical findings that should be separately classified as distinct syndromes. This could be accomplished either by creating additional subgroups within Group IV or by broadening the definitions of the existing subgroups.

Persons currently using other classification systems (*6-7*) or nomenclatures (e.g., AIDS-related complex, lymphadenopathy syndrome) can find equivalences with those systems and terminologies and the classification presented in this report. Because this classification system has only four principal groups based on chronology, presence or absence of signs and symptoms, and the type of clinical findings present, comparisons with other classifications based either on clinical findings or on laboratory assessment are easily accomplished.

This classification system does not imply any change in the definition of AIDS used by CDC since 1981 for national reporting. Patients whose clinical presentations fulfill the surveillance definition of AIDS are classified in Group IV. However, not every case in Group IV will meet the surveillance definition.

Persons wishing to comment on this material are encouraged to send comments in writing to the AIDS Program, Center for Infectious Diseases, CDC.

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¶This subgroup includes those patients with one or more of the specified cancers listed whose clinical presentation fulfills the definition of AIDS as used by CDC for national reporting.

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Errata

In the article, "Opportunistic Infections and Kaposi's Sarcoma among Haitians in the United States," (1982 July 9; 31:353-61), p 13 of this publication, the following was inadvertently omitted:

It is not clear whether this outbreak is related to similar outbreaks among homosexual males, IV drug abusers, and others, but the clinical and immunologic pictures appear quite similar. CDC is currently collaborating with local investigators to define this problem and identify risk factors.

Physicians who care for Haitian patients should be aware that opportunistic infections may occur in this population. Health-care providers who diagnose opportunistic infections or Kaposi's sarcoma among persons who do not have underlying disease and are not on immunosuppresive therapy are requested to report such cases to CDC through their appropriate state and local health departments.

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In the article, "Human T-Lymphotropic Virus Type III/Lymphadenopathy-Associated Virus Antibody Testing at Alternate Sites, "(1986 May 23;35:285), p. 169 of this publication, the figures in Table 5 for Colorado are incorrect. The correct figures are: Testing sites — 10; Pretest sessions—4,316; Persons tested—4,316; Post-test sessions—4,316; and Percent positive—12.0.

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