

Acquired Immune Deficiency Syndrome (AIDS): An Update

In a recent issue of the *Epidemiological Bulletin* (Vol.4, No.2, 1983), PAHO published epidemiological data on the acquired immune deficiency syndrome (AIDS) situation in the United States of America. Current U.S. Public Health Service recommendations for reducing the risk of transmission and preventing spread were included. This article contains additional epidemiological information and summarizes the discussions held at a meeting on AIDS convened at PAHO in August 1983.

During the meeting, participants agreed that AIDS cases be assigned to a country according to residence, and not on the basis of where the disease may have been acquired. Using travel histories and a probable incubation period of 18-24 months, countries may wish to attempt to identify indigenous cases and imported cases.

In the Region of the Americas, three countries (Canada, Haiti, and the United States) are experiencing indigenous transmission. Table 1 presents currently known AIDS cases by country of residence. These data must be interpreted with considerable caution, since systematic surveillance and reporting have not been initiated in many countries. These cases include both confirmed and suspected cases based on the U.S. Centers for Disease Control (CDC) case definition criteria or an adaptation of that criteria.

In most countries, the number of AIDS cases is very small. When complete information is available, nearly all cases occur in homosexual men with a history of having traveled to high incidence areas in the United States, especially New York City. More detailed information is available from cases in Canada, Haiti, and the United States.

Among the 33 cases in Canada, 29 are male and four are female. A total of 17 patients are homosexual men

and 12 are heterosexual men and women (nine and three, respectively). Sexual preference is unknown in three cases, and one is a child. As of 1 August 1983, 20 patients (18 men and two women) have died.

Table 2 summarizes available information from Haiti. Of the 157 confirmed and suspected cases, 114 are male and 43 are female. Approximately 14 per cent have been identified to date as homosexuals with a history of travel to the United States. Based on preliminary data, AIDS in Haiti appears to be slightly different in that patients are more likely to present gastrointestinal rather than respiratory symptoms; there is a greater proportion of women (27.3 per cent); and among the opportunistic infections, disseminated tuberculosis is quite common (37.1 per cent). The case-fatality ratio in Haiti approaches 100 per cent two years after the diagnosis.

In the United States, cases continue to occur at a rate of 7-8 new cases reported per day. Figure 1 depicts the epidemic curve; with the exception of the third quarter of 1981 which includes the backlog of cases identified at the beginning of CDC surveillance, the remaining points form a straight line, reflecting the epidemic's exponential growth. The number of reported cases is doubling every six months. The overall case-fatality ratio is approximately 42 per cent, but two-thirds of the cases diagnosed more than one year ago have died. Table 3 summarizes the fatality ratio by primary disease. A high proportion of patients with opportunistic infections and *Pneumocystis carinii* pneumonia have died, in comparison to patients with Kaposi's sarcoma. Almost half the cases continue to occur in New York City (40.2 per cent) at a rate of 110.7 cases per one million population, compared to a rate of 4.1 cases per one million population elsewhere in the United States, excluding New York, San Francisco, Miami, Newark, and Los Angeles.

Several risk factors have been identified and are summarized in Table 4. Of the 355 patients who cannot

Table 1. Acquired immune deficiency syndrome (AIDS) cases and deaths by country of residence through 1 August 1983.

Country	No. of cases	No. of deaths
United States of America	1,972	759
Haiti	157	—
Canada	33	20
Brazil	8	5
Argentina	6	3
Mexico	4	1
Jamaica	2	—
Suriname	1	1
Trinidad and Tobago	1	1

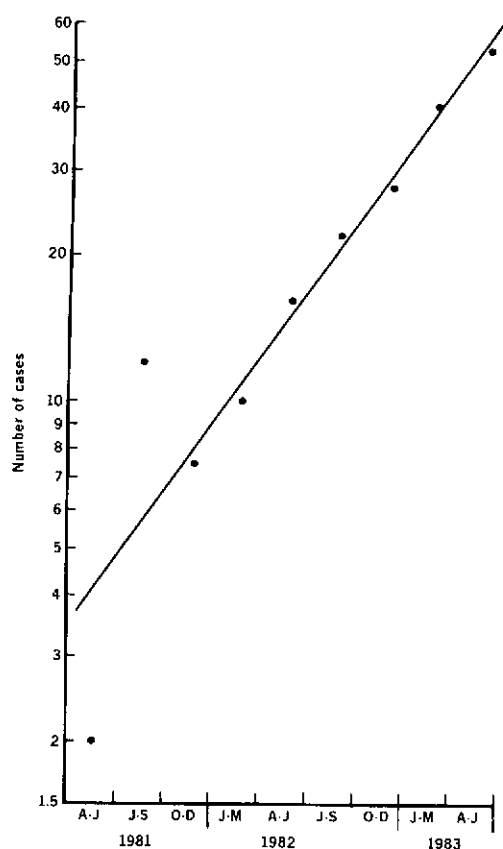
— No reported information.

Table 2. Cases of AIDS in Haiti by primary disease.^a

Primary disease	No. of cases
Opportunistic infections	137
Kaposi's sarcoma	16
Both	1
Unknown	3
Total	157

^a Ministry of Public Health and Population, Haiti.

Figure 1. Number of AIDS cases reported quarterly through June 1983.



be classified in one of the clearly defined risk categories, approximately 24 received blood transfusions in the past 10-37 months and 20 are female heterosexual partners of persons having one or more of the known risk factors. Approximately 45 per cent are foreign born persons residing in the United States; of these, the majority are from Haiti.

PAHO, the U.S. National Institutes of Health (National Institute of Allergy and Infectious Diseases), the CDC, and the Canadian Laboratory Centre for Disease Control cosponsored a meeting on AIDS at PAHO, 8-9 August 1983. It was one of a series of international meetings planned in various countries by the Regional Offices of WHO in preparation for a global meeting on AIDS in November 1983 in Geneva.

The purpose of the meeting was to bring together scientists and public health workers from 12 countries of the Americas to exchange information on the occurrence of AIDS and stimulate increased surveillance of the disease. The meeting was divided into five major sessions: epidemiology of AIDS in the Americas; recognition of AIDS, (including clinical and laboratory aspects); immunology and etiology; risk reduction and prevention; and surveillance recommendations.

Table 3. Cases and deaths due to AIDS in the United States, by primary disease through 19 October 1983.^a

Primary disease	No. of cases	Percentage of total	No. of deaths	Case-fatality ratio (%)
Kaposi's sarcoma	665	26.5	146	21.9
<i>Pneumocystis carinii</i> pneumonia	1,282	51.0	599	46.7
Both	180	7.2	107	59.4
Other opportunistic infections	386	15.3	196	50.8
Total	2,513	100.0	1,048	41.7

^a AIDS Unit. U.S. Centers for Disease Control (CDC), Atlanta, Georgia.

Table 4. Number and percentage distribution of AIDS cases in the United States, by sex and known risk categories.^a

Category	Male		Female		Total	
	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)
Homosexual/bisexual men	1,805	83.7	0	0	1,805	80.4
Heterosexual intravenous drug users	337	15.6	87	100.0	424	18.9
Hemophiliacs	16	0.7	0	0	16	0.7
Total	2,158	100.0	87	100.0	2,245	100.0

^a AIDS Unit. U.S. Centers for Disease Control (CDC), Atlanta, Georgia.

Surveillance is clearly incomplete; international reporting is voluntary; and case definitions are variable due to limited laboratory capacity in many countries. Thus, the epidemiological data must be interpreted with extreme caution. Consideration should be given to the use of 1-5 year survival tables rather than case-fatality ratios to measure the severity of this syndrome. The information base is changing and is therefore unstable. Apparent risk factors identified today may be replaced quickly by others as new studies are carried out in varied socioeconomic settings. In the absence of a known etiology and more complete knowledge of the epidemiology of AIDS, additional studies of its natural history are required to elucidate risk factors and point the way for basic research.

The diagnosis of AIDS is further complicated when the case occurs in a country with a disease pattern dominated by infectious illnesses. Differentiation of an opportunistic infection from background infection, such as disseminated tuberculosis, diarrhea due to cryptosporidiosis, etc., is made even more difficult when

laboratory capacities are limited. Careful attention must be given to case definition and the use of "suspect", "unconfirmed", and/or "probable" categories of AIDS should be considered. AIDS remains a clinical diagnosis by exclusion of other possible reasons for a given infection. Regardless of criteria selected for case definition, there will be problems of overdiagnosis, underdiagnosis, and misdiagnosis. Some of the clinical and laboratory findings have been summarized below:

Prodrome

- lasts 2-8 months
- fever
- night sweats and chills
- lymphadenopathy
- diarrhea and weight loss > 10 per cent of body weight
- fatigue, apathy, depression

Clinical Disease

- symptoms and signs are related to the final disease (Kaposi's sarcoma and/or opportunistic infection) which develops
- associated nonspecific immunosuppression as measured by:
 - leukopenia with absolute lymphopenia
 - depletion of OKT4 "helper" cells
 - decreased OKT4/OKT8 helper-suppressor ratio
 - anergy in vitro and in vivo
 - increased circulating immune complexes
 - polyclonal hypergammaglobulinemia
 - increased interferon levels

To be classified as an AIDS related complex (ARC) case, a patient must present at least two of each of the following clinical and laboratory criteria:

<i>Clinical</i>	<i>Laboratory</i>
1. Fever > 3 months	1. Lymphopenia, leukopenia, anemia, thrombocytopenia
2. Weight loss > 10 per cent body weight	2. Hypergammaglobulinemia
3. Lymphadenopathy > 3 months	3. Anergy
4. Diarrhea	4. Decreased OKT4 helper cells
5. Fatigue	5. Decreased OKT4/OKT8 helper-suppressor ratio
6. Night sweats	6. Decreased lymphocyte blastogenesis

Most accumulated evidence suggests an infectious etiology by an agent which targets specific cellular subsets of the cellular immune system. Transmission by intimate contact (perhaps sexual) involving mucosal surfaces, by parenteral spread through blood products, and by use of nonsterile needles, is likely. Airborne spread appears unlikely. No treatment to date has been successful in restoring immune competence including bone marrow transplantation, adoptive transfer of lymphocytes, and immunological enhancement with adjuvants, interleukin-2, or interferon.

Recommendations for risk reduction and disease prevention are based solely on epidemiological considerations related to sexual behavior and possible exposure to blood or blood products. In addition, it is known that transmission may occur when the patient is asymptomatic. There is presently no evidence of AIDS transmission to hospital personnel from contact with AIDS patients or clinical specimens; however, it appears prudent for hospital personnel to use the same precautions as those used for patients with hepatitis B virus infection in which blood and body fluids possibly contaminated with blood are considered infective. CDC has prepared guidelines of precautions advised for personnel providing care to AIDS patients as well as for laboratory staff.

CDC's Case Definition

The definition of AIDS cases is complicated by the lack of an identified causal agent and a specific laboratory test for the agent or some associated characteristic of the agent. AIDS is recognized through its complications. No single clinical or laboratory criteria are sufficiently specific to identify cases. There are no means available to detect subclinical cases, healthy carriers, or recovered patients.

Nevertheless, CDC has developed a case definition based on a combination of clinical and laboratory findings. For the limited purposes of epidemiological surveillance, CDC defines a case of acquired immune deficiency syndrome (AIDS) as a person who has had:

I) a reliably diagnosed disease that is strongly suggestive of an underlying cellular immune deficiency, but who, at the same time, has had:

II) no known underlying cause of cellular immune deficiency nor any other cause of reduced resistance reported to be associated with that disease.

This general case definition may be made more explicit by specifying:

I) the particular diseases considered strongly suggestive of cellular immune deficiency; and

II) the known causes of cellular immune deficiency, or other causes of reduced resistance reported to be associated with particular diseases.

Each category is further defined below:

I. Diseases Strongly Suggestive of Underlying Cellular Immune Deficiency:

These are listed below in five etiological categories: a) protozoal and helminthic; b) fungal; c) bacterial; d) viral; and e) cancer. Within each category, the diseases are listed in alphabetical order. "Disseminated infection" refers to involvement of liver, bone marrow, or multiple organs, not simply involvement of lungs and multiple lymph nodes. The required diagnostic methods with positive results are shown in parentheses.

A) Protozoal and Helminthic Infections:

1. Cryptosporidiosis, intestinal, causing diarrhea for over one month, (on histology or stool microscopy);
2. *Pneumocystis carinii* pneumonia, (on histology, or microscopy of a "touch" preparation or bronchial washings);
3. Strongyloidosis, causing pneumonia, central nervous system infection, or disseminated infection, (on histology);
4. Toxoplasmosis, causing pneumonia or central nervous system infection, (on histology or microscopy of a "touch" preparation).

B) Fungal Infections:

1. Aspergillosis, causing central nervous system or disseminated infection, (on culture or histology);
2. Candidiasis, causing esophagitis, (on histology, or microscopy of a "wet" preparation from the esophagus, or endoscopic findings of white plaques on an erythematous mucosal base);
3. Coccidioidomycosis, causing disseminated or central nervous system infection, (on culture or histology);
4. Cryptococcosis, causing pulmonary, central nervous system, or disseminated infection, (on culture, antigen detection, histology, or India ink preparation of cerebrospinal fluid);
5. Histoplasmosis, causing disseminated or central nervous system infection, (on culture or histology).

C) Bacterial Infections:

1. "atypical" mycobacteriosis (species other than *Mycobacterium tuberculosis* or *M. leprae*), causing dis-

seminated infection, (on culture);

2. Nocardiosis, (on culture or histology).

D) Viral Infections:

1. Cytomegalovirus, causing pulmonary, gastrointestinal tract, or central nervous system infection, (on histology);
2. Herpes simplex virus, causing chronic mucocutaneous infection with ulcers persisting more than one month, or pulmonary, gastrointestinal tract, or disseminated infection, (on culture, histology, or cytology);
3. Progressive multifocal leukoencephalopathy (presumed to be caused by Papovavirus), (on histology).

E) Cancer:

1. Kaposi's sarcoma, (on histology);
2. Lymphoma limited to the brain, (on histology).

II. Known Causes of Reduced Resistance:

Known causes of reduced resistance to diseases suggestive of immune deficiency are listed in the left column, while the diseases that may be attributable to these causes (rather than to the immune deficiency of AIDS) are listed on the right:

<i>Known Causes of Reduced Resistance</i>	<i>Diseases Possibly Attributable to the Known Causes of Reduced Resistance</i>
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|---|---|
| 1. Systemic corticosteroid or other immunosuppressive or cytotoxic therapy | 1. Any infection that began during or within one month after such therapy, if the therapy began before signs or symptoms specific for the infected anatomic sites (e.g., dyspnea for pneumonia, headache for encephalitis, diarrhea for colitis); or cancer diagnosed during or within one month after <i>more than four months</i> of such therapy (begun before signs or symptoms specific for the anatomic sites of the cancer). |
| 2. Widely spread cancer of lymphoid or histiocytic tissue, such as lymphoma, Hodgkin's disease, lymphocytic leukemia, or multiple myeloma; (this does not include cancer that is entirely localized to one site, such as primary lymphoma of the brain) | 2. Any other cancer or infection, regardless of whether diagnosed before or after (because a lymphoma may have been present before, even if diagnosed after) |

3. Age 60 years or older at diagnosis
4. Age under 28 days (neonatal) at diagnosis
5. An immune deficiency atypical of AIDS, such as one involving hypogammaglobulinemia; or an immune deficiency of which the cause appears to be a genetic or developmental defect (e.g., thymic dysplasia)
3. Kaposi's sarcoma
4. Toxoplasmosis, cytomegalovirus, or herpes simplex virus infections
5. Any infection or cancer diagnosed before or during such immune deficiency

Basic surveillance principles, including careful case definition, case reporting, and data analysis can be applied to AIDS surveillance. In the absence of any intervention, the goal of surveillance must be the identification of patients for further epidemiological and biological study. Case definition must take into consideration the level of laboratory capability.

PAHO's Epidemiology Unit at Headquarters will act as a clearinghouse to collect voluntary data on the occurrence of cases in the Region.

(Source: Epidemiology Unit, Health Programs Development, PAHO.)

Surveillance of the Leading Causes of Premature Death

Because death is inevitable, the goal of public health is not to reduce the total number of deaths, but rather to increase the number of years that a person is active and healthy. Thus, the years of potential life lost due to a particular cause is a more useful index for public health practitioners than is the total number of deaths due to that cause. In March 1982 the U.S. Centers for Disease Control introduced a new table in its *Morbidity and Mortality Weekly Report* (Vol. 32(18):243): "Table V. Potential years of life lost, deaths, and death rates, by cause of death, and estimated number of physician contacts by principal diagnosis" (1) (Table 1). The table was designed to provide the reader information on the relative importance and magnitude of certain health issues. In the past, the importance of specific health problems has often been gauged by the number of deaths attributed to each. The new table was developed to emphasize the concept that the age of those who die from a particular problem is also an important determinant of the public health significance of that problem. Thus, a condition that causes a number of deaths among predominantly young people may have a higher priority for prevention than one which causes the same number of deaths among a generally elderly population.

The relative importance of causes of death changes dramatically when viewed in terms of potential years of life lost prematurely (before age 65). For example, in 1981 heart disease, cancer, and cerebrovascular disease accounted for 67.7 per cent of all deaths in the United

States; motor vehicle and other accidents, suicide, and homicide accounted for 7.8 per cent (2). However, for the same year, motor vehicle and other accidents, suicide, and homicide accounted for 40.4 per cent of the total years of life lost prematurely; heart disease, cancer, and cerebrovascular disease accounted for 37.6 per cent (3).

The age-specific nature of health problems in the United States was addressed in 1979 in *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention* (4). This report established priority areas for preventing morbidity and mortality by life stages in the United States; these included:

<i>Infants:</i>	low birth weight, birth defects, injuries at birth, sudden infant death syndrome, and accidents;
<i>Children:</i>	learning disorders, mental retardation, child abuse and neglect, nutrition, and accidents;
<i>Adolescents and young adults:</i>	motor vehicle and other accidents, suicide, homicide, sexually transmissible diseases, teenage pregnancy, alcohol and drug misuse, and mental health;
<i>Adults:</i>	heart disease, malignant neoplasms, cerebrovascular disease, pneumonia and influenza, diabetes mellitus, and cirrhosis.