ETHICS

The American Association for the Advancement of Science and the Illinois Institute of Technology's Center for the Study of Ethics in the Professions will co-sponsor the "AAAS-IIT Workshop on Professional Societies and Professional Ethics" in Philadelphia, May 24 and 25.

Contact Sally Painter, AAAS Committee on Scientific Freedom and Responsibility, 1333 H St. NW, Washington, DC 20005; or call (202) 326-6798.

INTERNAL MEDICINE

The ninth annual "Update in Internal Medicine" of the University of Texas Health Science Center at Dallas, will be held in Dallas, May 27–30.

Contact Ann Parchem, Div. of Continuing Education, University of Texas Health Science Ctr. at Dallas, 5323 Harry Hines Blvd., Dallas, TX 75235; or call (214) 688-2166.

NUCLEAR MEDICINE

Albert Einstein College of Medicine and Montefiore Medical Center will offer a course entitled "Nuclear Medicine . . . 1986: Current Clinical Practice and Future Concepts" at the Grand Hyatt Hotel in New York, May 27–30. The fee is $400.

Contact Mitchell H. Stromer, Albert Einstein College of Medicine, 1300 Morris Park Ave., Bronx, NY 10461; or call (212) 904-4180.

TECHNOLOGY ASSESSMENT

A conference entitled "Technology Assessment, Transplantation, and the Future of Health Care" will be held at the Four Seasons Olympic Hotel in Seattle, May 27–29. The fee is $500.

Contact the Registrar, Battelle/BSSP, 4000 NE 41st St., Seattle, WA 98105; or call (800) 426-6762.

SOCIETY OF CRITICAL CARE MEDICINE

The Society will hold its "15th Annual SCCM Educational and Scientific Symposium" in Washington, D.C., May 27–31. The fee is $375.

Contact Tracy Schultz, Society of Critical Care Medicine, 223 E. Imperial Hwy., Suite 110, Fullerton, CA 92635; or call (714) 870-5243.

THE ACQUIRED IMMUNODEFICIENCY SYNDROME

A forum entitled "AIDS: Impact on Public Policy" will be sponsored by the New York State Department of Health and held in New York City, May 28–30.

Contact S. Chorost, AIDS Institute, Rm. 1683, Tower Bldg., Empire State Plaza, Albany, NY 12237; or call (518) 474-0641.

GYNECOLOGIC CANCER

The American Cancer Society and the Catholic Medical Center of Manchester, N.H., will offer the "Symposium on Gynecologic Cancer and Laser Therapy" in Manchester, on May 28. The fee is $85.

Contact Vikie K. Laliberte, Continuing Medical Education, Catholic Medical Ctr., 100 McGregor St., Manchester, NH 03102; or call (603) 668-3545.

FAMILY PHYSICIANS

The 1986 Annual Scientific Meeting of the Massachusetts Academy of Family Physicians will be held at the Stratton Resort Inn, in Stratton, Vt., May 30–June 1.

Contact the Massachusetts Academy of Family Physicians, 13 Elm St., Manchester, MA 01944; or call (617) 927-8330.

UNIVERSITY OF NEBRASKA MEDICAL CENTER

The Center will offer a course entitled "Advanced Cardiac Life Support" in Omaha, May 29 and 30. The fee is $130.

Contact Ann Fitzgerald, University of Nebraska Medical Ctr., Ctr. for Continuing Education, 42nd & Dewey Ave., Omaha, NE 68105-1065; or call (402) 559-4152.

CORONARY MEDICINE

A course entitled "Coronary Prevention and Rehabilitation: A Multidisciplinary Seminar" will be offered in Rochester, N.Y., May 29 and 30.

Contact the Office of Continuing Professional Education, University of Rochester Medical Ctr., 601 Elmwood Ave., Box 677, Rochester, NY 14642; or call (716) 275-4392.

OBSTETRICS AND GYNECOLOGY

The second annual Long Island Assembly of Obstetrics and Gynecology will be held at the Garden City Hotel, in Garden City, N.Y., May 29 and 30. The topic covered will be "Crisis Issues of the 80's: Impact of Medical Liability on the Practice of OB/GYN." The fee is $300.

Contact Ann Boehme, Continuing Education Dept., Long Island Jewish Medical Ctr., New Hyde Park, NY 11042; or call (718) 470-8650.

HYPERTENSION AND ATRIAL PEPTIDES

The following meetings will be held at the Waldorf–Astoria Hotel in New York in May: the first annual meeting of the American Society of Hypertension (May 29–31); and the first World Congress on Biologically Active Atrial Peptides (May 31 and June 1).

Contact the American Society of Hypertension, SLACK Inc., 6900 Grove Rd., Thorofare, NJ 08086.

OTOLARYNGOLOGY

The Department of Otolaryngology at the SUNY Health Science Center will offer a course entitled "Application of CO_2 Laser in Otolaryngology" at the Sheraton University Inn in Syracuse, N.Y., May 30 and 31. The fee is $225.

Contact the Office of Continuing Education, Upstate Medical Ctr., State University of New York, 750 E. Adams St., Syracuse, NY 13210; or call (315) 473-4304.

SPECIAL REPORT

OCCUPATIONAL RISK OF THE ACQUIRED IMMUNODEFICIENCY SYNDROME AMONG HEALTH CARE WORKERS

Abstract In August 1983, we initiated nationwide prospective surveillance of health care workers with documented parenteral or mucous-membrane exposures to blood or other body fluids of patients with the acquired immunodeficiency syndrome (AIDS) or AIDS-related illnesses. The purpose of the surveillance project is to quantitate prospectively the risk to health care workers of acquiring the AIDS virus, human T-cell lymphotropic virus Type III/lymphadenopathy-associated virus (HTLV-III/LAV), as a result of occupational exposures. By December 31, 1985, 938 health care workers were being followed in the surveillance project. The mean length of follow-up was 15 months (range, 0 to 56) and 531 health care workers (57 percent) had been followed for more than one year. Needlestick injuries and cuts with sharp instruments accounted for 76 percent of the exposures. Over 85 percent of all exposures were to blood or serum.

None of the health care workers have acquired signs or symptoms of AIDS. Analyses of T-lymphocyte subsets were performed for 341 (36 percent) of the exposed health care workers, and tests for antibody to HTLV-III/LAV were performed for 451 (48 percent). Seven health care workers who had low helper/suppressor T-lymphocyte ratios on initial testing were retested; only three had persistently

low ratios. Only two health care workers tested were seropositive for antibody to HTLV-III/LAV.

The results of this surveillance project, thus far, suggest that the risk to health care workers of occupational transmission of HTLV-III/LAV is low (the upper bound of the 95 percent confidence interval for the seroprevalence rate among workers with ≥3 months of follow-up with HTLV-III/LAV antibody testing is 1.65 percent) and appears to be related to parenteral exposure to blood.

THE acquired immunodeficiency syndrome (AIDS) is caused by a human retrovirus known as human T-cell lymphotropic virus Type III (HTLV-III), also called lymphadenopathy-associated virus (LAV) and AIDS-associated retrovirus.[1-7] Serologic tests can detect antibody to HTLV-III/LAV, thereby providing an indicator of past or present infection with the virus.[8-16] Serologic evidence of exposure to HTLV-III/LAV is seen in 70 to 100 percent of patients with AIDS[8,17-20] and in up to 70 percent of asymptomatic persons in certain populations with an increased risk of AIDS.[8-14,17-26] However, preliminary data suggest that the prevalence of antibody to HTLV-III/LAV is less than 1 percent among persons who are not in identified risk groups for the disease (e.g., blood donors).[9,14,19,21,22]

Early in the AIDS epidemic, it became apparent that some persons with an increased risk of acquiring hepatitis B infection (i.e., homosexual men, intravenous drug users, and transfusion recipients) also had an increased risk of acquiring AIDS or HTLV-III/LAV infection. Because health care workers have an increased risk of hepatitis B infection, we were concerned that those taking care of patients with AIDS might face an increased risk of acquiring AIDS or AIDS-related illnesses. To evaluate this possibility, in August 1983 we initiated nationwide prospective surveillance of health care workers with parenteral or mucous-membrane exposure to blood or other body fluids from patients with AIDS or illnesses considered to be part of the AIDS spectrum (e.g., chronic generalized lymphadenopathy and wasting syndrome). This report presents the results of surveillance of health care workers enrolled from August 15, 1983, to December 31, 1985.

METHODS

Project Design

Health care workers were eligible for enrollment in the surveillance project if they had been exposed to blood or other body fluids of a patient with AIDS or an AIDS-related illness as a result of a needlestick, a cut with a sharp object, contamination of an open wound, or contamination of a mucous membrane (e.g., a splash in the eye of blood or other fluid). In this surveillance project, the case definition for AIDS was the Centers for Disease Control (CDC) surveillance definition.[23] Illnesses considered part of the AIDS spectrum are unexplained chronic generalized lymphadenopathy[24,25] and other combinations of signs and symptoms that are included in the term "AIDS-related complex."[26]

The following evaluations were performed for each health-care worker upon enrollment and at each follow-up visit (every six months): a history was taken and a physical examination was performed by a physician or nurse practitioner; laboratory studies, including a white-cell count with a differential cell count and a platelet count, were performed at the cooperating institution; and serum and whole-blood specimens were obtained and sent to the CDC within 24 hours of collection. The serum specimens were banked for future testing; phenotypic T-cell subset analyses were performed on the specimens of whole blood.

Upon enrollment, each health care worker completed a confidential questionnaire about nonoccupational risk factors for AIDS (e.g., a history of possible sexual exposure and intravenous drug use). All data were submitted on coded forms, and codes could be broken only by the cooperating investigator at each institution. Thus, no identifying information on enrolled health care workers was available to the CDC. In addition, a case-report form was completed on the patient to whom the health care worker was exposed, if the case had not previously been reported to the CDC.

The surveillance project was initially designed to enroll, over a three-year period, 500 health care workers with documented parenteral or mucous-membrane exposure to clinically diagnosed patients with AIDS or illnesses within the AIDS spectrum. Since more than 900 health care workers were enrolled during the first 28 months of the project, we decided to limit new enrollments to health care workers who had parenteral exposures to blood from patients with asymptomatic or symptomatic infection with HTLV-III/LAV and from whom an "acute" (≤30 days from the exposure) serum sample was available.

Immunologic Testing

Immunologic testing for lymphocyte subpopulations was performed at the CDC by indirect immunofluorescence on a fluorescence-activated cell sorter (Becton Dickinson, Sunnyvale, Calif.) with use of commercially available monoclonal antibodies (OKT3 for T cells, OKT4a for T helper cells, and OKT8 for T suppressor cells) (Ortho Pharmaceuticals, Raritan, N.J.) and a fluorescein-conjugated antimouse immunoglobulin (prepared at the CDC by methods described previously[27,28]).

Testing for HTLV-III/LAV Antibody

Testing of banked serum samples for HTLV-III/LAV antibody was begun shortly after the procedure became available at the CDC, one year after the surveillance project was initiated. Before the HTLV-III/LAV antibody test was performed, written informed consent was obtained from the health care worker. Consent forms were maintained at participating institutions.

Antibody to HTLV-III/LAV was measured with the Abbott HTLV-III enzyme immunoassay (Abbott Laboratories, North Chicago).[29] A serum specimen was retested if, according to the criteria for interpretation of this assay, it was reactive on initial testing. If the serum sample was reactive on repeat testing, the sample was interpreted as positive for antibody to HTLV-III/LAV. Any health care worker with a positive test for HTLV-III/LAV antibody by the Abbott assay was contacted by the institutional investigator for collection of additional serum and whole-blood samples for follow-up testing. All positive tests for HTLV-III/LAV antibody by the Abbott assay were confirmed by the enzyme-linked immunoelectrotransfer blot (Western blot) technique.[15]

A test for antibody to HTLV-III/LAV by the Abbott assay was considered a "true positive" if the assay was performed on initial and follow-up serum samples and both tests were positive, and the Western blot assay was positive on initial and follow-up serum samples. A positive test for antibody to HTLV-III/LAV that did not meet these criteria was considered "false positive." "False positive" tests were interpreted as negative in the case definition of HTLV-III/LAV infection (see below).

Virus isolation from fresh lymphocytes (≤24 hours after collection of the whole-blood sample) was attempted for all subjects with a true or false positive test for antibody to HTLV-III/LAV by the Abbott assay.[7]

Case Definition of HTLV-III/LAV Infection

The following criteria were used to define the serologic status of exposed health care workers: seronegativity (i.e., all serum speci-

mens obtained on or after the date of exposure were negative for antibody to HTLV-III/LAV by the Abbott assay); seropositivity (i.e., an initial serum specimen obtained on or after the date of exposure was positive for antibody to HTLV-III/LAV by the Abbott assay, and positivity was confirmed by the Western blot assay [a seropositive health care worker was considered to have had HTLV-III/LAV infection]); and seroconversion (i.e., an initial serum specimen obtained on or after the date of exposure was negative for antibody to HTLV-III/LAV by the Abbott and Western blot assays, but follow-up serum specimens were positive for antibody to HTLV-III/LAV by both assays).

Statistical Analysis

Confidence limits for the true rate of seropositivity were calculated for the number of health care workers tested for HTLV-III/LAV antibody and the number found to have a positive test.[30]

Results

Enrollees

As of December 31, 1985, 966 health care workers had been enrolled in the surveillance project; 938 are being followed. Twenty-eight health care workers who left the institutions at which they had been enrolled were lost to follow-up and were not included in subsequent analyses. Exposure of health care workers was reported from hospitals, clinics, and state and local health departments in 40 states, the District of Columbia, and Puerto Rico. Eight states reported on approximately two thirds of the exposed health care workers: New York, 159 (17 percent); California, 111 (12 percent); New Jersey, 74 (8 percent); Pennsylvania, 67 (7 percent); Florida, 59 (6 percent); Ohio, 55 (6 percent); Massachusetts, 52 (6 percent); and Texas, 41 (4 percent). Enrolled subjects ranged in age from 18 to 76 years (mean ±SD, 33.5±9.0); 85 percent were white and 78 percent were female. The enrolled subjects included 572 nurses (61 percent), 155 physicians or medical students (17 percent), 97 laboratory workers (10 percent), 52 phlebotomists (6 percent), and 41 respiratory therapists (4 percent). The remaining 21 health care workers (2 percent) had less direct contact with patients or laboratory specimens. As of December 31, 1985, the mean length of follow-up for enrolled subjects was 15 months (median, 13; range 0 to 56); 805 (86 percent) had been followed for more than six months and 531 (57 percent) for more than one year.

Table 1. Route of Exposure and Type of Potentially Infective Body Fluid to Which Enrolled Health Care Workers Were Exposed.

Route of Exposure	Body Fluid				
	Blood	Saliva	Urine	Other/Unknown	Total
	no. of health care workers (%)				
Needlestick	612	2	1	22	637 (68)
Mucous membrane	57	64	7	4	132 (14)
Contamination of an open wound	70	4	8	11	93 (10)
Cut with a sharp object	72	1	1	2	76 (8)
Total	811	71	17	39	938 (100)
(%)	(86)	(8)	(2)	(4)	(100)

Table 2. Circumstances of Exposure among 373 Health Care Workers with Preventable Exposures to Body Fluids of Patients with AIDS or AIDS-Related Illnesses.

Circumstance of Exposure	No. of Health Care Workers (%)*
Recapping a used needle	152 (16)
Injury from a needle improperly disposed of or a sharp object	119 (13)
Contamination of an open wound	93 (10)
Using needle-cutting device	9 (1)
Total	373 (40)

*Number (%) of exposed health care workers in the enrolled group (n = 938) with exposures that were probably preventable.

Circumstances of the Exposures

Most exposures occurred in direct patient care areas: 528 (56 percent) occurred in a patient's room or on the wards, 207 (22 percent) in intensive care units, and 33 (4 percent) in emergency clinics. One hundred two (11 percent) occurred in operating or procedure rooms or morgues, and 68 (7 percent) took place in laboratories. Eighty-six percent of the subjects were exposed to blood or serum, 8 percent to saliva, 2 percent to urine, and 4 percent to other body fluids or unknown sources (Table 1). If recommended precautions had been followed,[31-33] 40 percent of the exposures could probably have been prevented (Table 2).

Patients to Whom Health Care Workers Were Exposed

In several instances, more than one health care worker at a particular institution had a documented exposure to the same patient; the 938 subjects had exposures to the blood or other body fluids of 666 patients with AIDS or AIDS-related illness. Information is available on 598 (90 percent) of these 666 patients. Of these 598 patients, 88 percent (527) met the CDC surveillance definition for AIDS, and 12 percent (71) had AIDS-related illnesses. The group of 527 patients with AIDS consisted of 356 homosexual or bisexual men (68 percent), 92 intravenous drug users (17 percent), 13 patients with hemophilia (2 percent), 14 blood-transfusion recipients (3 percent), 9 heterosexual contacts of persons in risk groups (2 percent), 9 children with at least one parent in a risk group for AIDS (2 percent), and 34 persons with no identified risk factor for AIDS (6 percent) (including 14 persons born in countries in which most cases of the disease have not been associated with known risk factors). Of the 71 patients with AIDS-related illnesses, 59 (83 percent) were in a group known to have an increased risk of contracting AIDS.

Immunologic Testing

For 341 health care workers, analyses of T-lymphocyte subsets in whole blood were performed on specimens received at the CDC by December 15, 1984. On initial testing, 328 subjects (96 percent) had normal T helper/T suppressor cell ratios. These blood speci-

mens were obtained at a mean period after exposure (±SD) of 123±165 days (median, 54; range, 0 to 1084). Of the 12 health care workers whose initial specimens showed abnormally low ratios, 7 submitted follow-up whole-blood specimens for determination of T helper/T suppressor cell ratios. Three of these seven had a persistent ratio below 1.0 (normal range, 1.0 to 3.9). None of the three have had clinical manifestations of HTLV-III/LAV infection. One of the three had an initial ratio of 0.77 and follow-up ratios of 1.36, 0.94, and 0.78, respectively. This subject has not consented to HTLV-III/LAV antibody testing. One of the remaining two was seronegative (the T helper/T suppressor cell ratio was initially 0.40 and a follow-up ratio was 0.45) for antibody to HTLV-III/LAV, and the other was seropositive (see below).

Testing for HTLV-III/LAV Antibody

Of the 938 health care workers, 451 have had 1016 serum samples tested for antibody to HTLV-III/LAV. Of these 451, 85 percent (386) were exposed to blood or serum (79 percent through needlesticks) and 15 percent (65) were exposed to other body fluids (23 percent through needlesticks) (Table 3). The mean period from exposure to collection of the first serum specimen was 112 days (median, 41; range, 0 to 1027); 41 percent of the subjects (185) had the first specimen collected within 30 days after the exposure. The mean number of days from exposure to collection of the last serum sample for antibody determination was 380 days (median, 364; range, 0 to 1304). Of the 451 health care workers whose serum was tested for antibody, 21 percent (96) have not yet had a follow-up serum sample tested, 78 percent (350) have had tests on at least two serum samples obtained more than 90 days apart, and 61 percent (275) have had tests on at least two serum samples obtained at least 6 months apart. Eighty-four percent (378) have had at least one serologic test performed more than 90 days after the date of exposure, and 79 percent (356) have had at least one serologic test performed more than 180 days after the date of exposure (Table 4).

Two health care workers were seropositive for antibody to HTLV-III/LAV (Table 3). Both had parenteral exposure to blood from a patient with AIDS. The first seropositive health care worker (Subject 1) was positive for the antibody when first tested nine months after exposure. Subject 1 is a female nurse who sustained a puncture wound from a colonic biopsy needle that was used on a patient with AIDS. The needle was visibly contaminated with blood and feces. The nurse was treated with hepatitis B immune globulin after exposure. Her initial serum specimen was drawn upon enrollment in the surveillance project (287 days after the exposure); the specimen was positive for HTLV-III/LAV antibody. Follow-up serum samples, obtained 476 and 617 days after the date of exposure, were also positive. The serum sample obtained on day 287 was positive by Western blot assay for antibodies to p24 and p41 antigens. The serum samples obtained on days 476 and 617 were equivocal on Western blot assays for antibodies to the p24 and p41 antigens. The T helper/T suppressor cell ratios in whole blood obtained on days 287, 476, and 617 were 0.67, 0.82, and 0.06, respectively (normal range, 1.0 to 3.9). The results of viral culture for HTLV-III/LAV performed on the nurse's blood were negative. When interviewed by health officials, she denied known risk factors for infection with HTLV-III/LAV. Her sexual partner was seropositive for antibody to HTLV-III/LAV but declined to be interviewed by health officials; therefore, heterosexual transmission could not be excluded as the source of the health care worker's infection.[34]

The second seropositive health care worker (Subject 2) had an "acute" serum specimen (within 30 days of exposure) that was negative for antibody to HTLV-III/LAV and a six-month follow-up specimen that was positive. The results of viral culture for HTLV-III/LAV in blood were negative. The case history of Subject 2 is presented in a Letter to the Editor in this issue of the *Journal*.[35]

Table 3. Results of Testing Health Care Workers for Antibody to HTLV-III/LAV, According to Route of Exposure and Type of Body Fluid.

Route of Exposure	Body Fluid				No. Positive for Antibody
	Blood	Saliva	Other	Total	
Needlestick	305	2	13	320	2*
Contamination of mucous membrane	25	29	10	64	0
Contamination of an open wound	23	4	5	32	0
Cut with a sharp object	33	0	2	35	0
Total	386	35	30	451	2
(%)	(85)	(8)	(7)	(100)	

*Both needlestick exposures were to blood from a patient with AIDS.

Table 4. Number of Health Care Workers Tested for Antibodies to HTLV-III/LAV, According to Number of Days from Exposure to Collection of First Specimen and Number of Days from Exposure to Collection of Last Specimen.

Days from Exposure to First Specimen	Days from Exposure to Last Specimen*			
	1–30	31–90	91–180	>180
	no. of workers			
0–30 (n = 185)	43	3	7	132
31–60 (n = 86)	0	18	4	64
61–90 (n = 45)	0	9	0	36
>90 (n = 135)	0	0	11	124
Total	43	30	22	356

*The mean number of days from exposure to collection of the last serum sample was 380 (range, 1 to 1304; median, 364).

Discussion

The epidemiology of AIDS is similar in some respects to that of hepatitis B virus infection. Both

hepatitis B and HTLV-III/LAV infection can be transmitted through sexual contact, through blood transfusions, and through contaminated needles shared by intravenous drug users. However, the epidemiology of HTLV-III/LAV infection appears to differ markedly from that of hepatitis B infection in the health care setting. Whereas acquisition of hepatitis B infection is an occupational hazard for health care workers,[36] with an incidence of seroconversion of 19 to 27 percent after accidental percutaneous injection of blood or serum from patients who are positive for hepatitis B e antigen,[37,38] the risk of HTLV-III/LAV infection to health care workers exposed to patients with AIDS appears to be extremely low.

Two of the health care workers enrolled in this surveillance project had antibody to HTLV-III/LAV. One was seropositive on initial testing and on all subsequent testing. However, no serum specimens obtained before her enrollment in the project, more than nine months after the exposure, were available for testing. The investigation of this health care worker for other possible risk factors for HTLV-III/LAV infection is incomplete because her sexual partner has declined to participate in the follow-up. Thus, a clear interpretation of the epidemiology of this subject's infection is not possible.

The second seropositive health care worker was negative for antibody to HTLV-III/LAV when first tested shortly after her exposure but was positive approximately six months after the exposure.[35] An epidemiologic investigation conducted by state and federal public health officials did not identify other risk factors for HTLV-III/LAV infection in this subject or her husband. Therefore, this health care worker has a documented case of occupationally acquired HTLV-III/LAV infection.

There are two reports in the medical literature in which a total of four health care workers were believed to have contracted HTLV-III/LAV infection as a result of occupational exposure. The first report describes a nurse in England who had seroconversion, acquiring antibody to HTLV-III/LAV as measured by enzyme immunoassay, indirect immunofluorescence, and a Western blot assay performed at the CDC, after an accidental needlestick exposure to blood from a patient with AIDS.[39] The nurse apparently had none of the recognized risk factors for AIDS. At the time of publication of that report, three months after the exposure, the nurse had no signs or symptoms of AIDS.

The second report describes three health care workers who were found to have antibody to HTLV-III/LAV, as measured by enzyme and Western blot assays, when first tested more than six months after parenteral exposure to blood.[34] Two of these three subjects have also been described in the *Morbidity and Mortality Weekly Report*.[40] The third subject in that report is the same as Subject 1 in this article. These three health care workers denied belonging to known risk groups for AIDS. However, their HTLV-III/LAV infections cannot be definitely ascribed to occupational transmission because serum specimens from the time of the exposure or within 30 days of it are unavailable, making it impossible to determine when they actually became infected. In addition, no information is available concerning the health status of the donors of the pooled blood products to which one of the three health care workers was exposed.

The absence of signs and symptoms of AIDS and the low prevalence of antibody to HTLV-III/LAV in health care workers in this surveillance project, along with results from other studies,[34,41,42] suggest that the risk to health care workers of occupational transmission of HTLV-III/LAV is low. In this project, the observed seroconversion rate among all health care workers with both an acute serum specimen ($\leq$30 days after exposure) and at least one follow-up specimen (>90 days after exposure) tested is 0.72 percent (1 of 139 [upper bound of the 95 percent confidence interval, 3.34 percent]); among those with parenteral exposure to blood, the seroconversion rate is 0.94 percent (1 of 106 [upper bound of the confidence interval, 4.36 percent]). The seroprevalence rate among all health care workers with at least one serum sample tested more than 90 days after exposure is 0.53 percent (2 of 378 [upper bound, 1.65 percent]); and among the cohort with parenteral exposures to blood, the seroprevalence rate is 0.72 percent (2 of 278 [upper bound, 2.24 percent]).

The low incidence of seroconversion resulting from exposure to patients with AIDS is reassuring. However, fewer than 15 percent of the health care workers in the surveillance project have been exposed to patients who do not meet the CDC surveillance definition of AIDS (i.e., they are not either asymptomatic persons or persons with illnesses within the AIDS spectrum who are positive for antibody to HTLV-III/LAV), and such patients, who may have higher levels of circulating T lymphocytes than patients with AIDS as defined by the CDC, may have higher circulating titers of virus and may therefore be more likely to transmit HTLV-III/LAV infection. Thus, the data from this surveillance project do not permit conclusions about the risk to health care workers of acquiring HTLV-III/LAV infection from patients infected with HTLV-III/LAV who do not meet the CDC surveillance definition of AIDS. Future efforts to define the occupational risk of HTLV-III/LAV infection in health care workers will focus on prospective studies of those with parenteral exposures to potentially infectious material from patients with HTLV-III/LAV infection who do not meet the CDC definition of AIDS.

Recommendations for preventing AIDS in health care workers are designed to minimize the risk of mucosal or parenteral exposure to potentially infectious material from patients with asymptomatic or symptomatic infection with HTLV-III/LAV.[30-32,43-45] In this surveillance project, 40 percent of the exposures could probably have been prevented if the workers had fol-

lowed recommended precautions. Despite the low incidence of documented transmission of HTLV-III/LAV infection from patients to health care workers, these precautions remain valid because they emphasize infection-control practices that may reduce the risk of acquiring other infections, such as hepatitis B virus. Health care workers should become familiar with and follow the recommended precautions when caring for or handling specimens from persons with AIDS or AIDS-related illnesses.

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